



RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY

DIRECTION NO. 26 OF 2016

**DIRECTION GOVERNING THE EXAMINATION LEADING TO THE DEGREE OF
POST GRADUATE DIPLOMA IN COMPUTER COMMERCIAL APPLICATIONS (PGDCCA)
Choice Based Credit System (CBCS)**

WHEREAS the Maharashtra Universities Act No. XXXV of 1994 has come into force with effect from 22nd July, 1994

AND

WHEREAS the amendment to the said Act came to be effected from 2016-2017

AND

WHEREAS the Faculty of Commerce at its meeting held on 14.2.2012 have decided to update and upgrade the existing syllabus for the award of the degree of Post Graduate Diploma in Computer Commercial Applications (PGDCCA) commensurate with the curricula existing in the various Universities in India and with a view to include the latest trends in the commerce stream as well as to design it to suit to the needs of the industries and corporate houses as provided under Section 38(a) of the Act.

AND

WHEREAS the Coordinator of the Faculty of Commerce concurred with the recommendations of the Special Task Committee in Computer Application in the Faculty of Commerce.

AND

WHEREAS the Special Task Committee in Computer Application in its meetings held on 24.2.2016 updated the existing syllabi and recommended some modifications in the scheme of examination for postgraduate courses,

AND

WHEREAS the Coordinator, Faculty of Commerce has consented to the changes in the syllabus and the scheme of examination for the award of Post Graduate Diploma in Computer Commercial Applications (PGDCCA),

AND

WHEREAS the Vice-Chancellor, Nagpur University, Nagpur approved the recommendations so made by the Special Task Committee in the Faculty of Commerce

duly concurred by the Coordinator, Faculty of Commerce as required under Section 38 (a) of the Act .

AND

WHEREAS As per the Advice of the Vice Chancellor, Coordinator, Faculty of Commerce & Coordinator, Special Task Committee (Computer Application) in the meeting held on 24.2.2016 constituted sub-committee for syllabus restructuring of PGDCCA with Semester pattern.

AND

Whereas, The Sub-committee submitted the Semester Draft Syllabus of PGDCCA in meeting held on 24.2.2016.

AND

Whereas, the Sub-committee submitted the Semester Draft Syllabus of BCCA in meeting held on 5.4.2016.

AND

Whereas, the University has issued Direction to 15 of 2017 dealing with the composition of the four faculties created by the Act, where under the existing different faculties of the University have been merged into the four new faculties created by the Act, by which the erstwhile independent faculty of “Law” has been merged in the new faculty of “Humanities” under the Act;

AND

Whereas, the University has issued Direction No. 13 of 2017 prescribing “conditions for conduct of undergraduate and post graduate examinations based on credit based/choice based credit system, in all faculties, Direction, 2017” on 06/06/2017, prescribing certain conditions relating to maximum and minimum passing marks in the theory /practical subjects prescribed in the semester of a course, the maximum theory and practical subjects in a semester, rules of exemption and ATKT, and also the coding pattern for the subjects in each semester of the course, necessitating appropriate changes in the existing Directions governing the undergraduate and post graduation courses in all the faculties of the University;

AND

WHEREAS it is expedient to provide an Ordinance for the purpose of prescribing examinations leading to the degree of Bachelor of Commerce (B.Com. (Computer Application))(BCCA) in the Faculty of Commerce and phasic repeal of Ordinance No. 21 of 1994 governing the existing course of Bachelor of Commerce (B.Com. (Computer Application))(BCCA) but the Ordinance making is a consuming process and there is an exigency necessitating exercise of powers by the Vice-Chancellor under section 12(8) of the Act;

Now, therefore, I, Dr. S. P. Kane, Vice-Chancellor, Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur in exercise of the powers vested in me under Section 14(8) of the Maharashtra University Act of 1994 do hereby issue the following direction:

This direction shall be called “**DIRECTION REGARDING EXAMINATIONS LEADING TO THE POST GRADUATE DIPLOMA IN COMPUTER COMMERCIAL APPLICATIONS (PGDCCA) IN THE FACULTY OF COMMERCE, RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR**”.

1. There shall be TWO examinations leading to the degree of Post Graduate Diploma in Computer Commercial Applications (PGDCCA) namely:

Part-I

(1) The Post Graduate Diploma in Computer Commercial Applications (PGDCCA) Semester - I Examination,

(2) The Post Graduate Diploma in Computer Commercial Applications (PGDCCA) Semester - II Examination,

2. The duration of the Post Diploma Course under this shall be of one academic years. The PGDCCA Semester - I Examination at the end of the first Semester and PGDCCA Semester - II Examination at the end of the Second Semester in First Year.

3. The Examinations Specified in above paragraph (i.e., Paragraph – 2) above shall be held twice a year (Winter + Summer) at such places and on such dates as may be fixed by the University.

4. The details of the procedure for admission as well as eligibility for examination of:

(A) An applicant of the **PGDCCASemester – I** Examination shall have :

(i) Obtained a Bachelor degree of this University or an equivalent Bachelor Degree of any statutory University in any faculty.

(ii) Prosecuted a regular course of study for not less than one Semester in any recognized institution or college affiliated to the R. T. M. Nagpur University where the course will be conducted.

(B) An applicant of the **PGDCCASemester - II** Examination shall have :

Appeared PGDCCA Semester – I Examination of this University

Admission to Semester	Candidate should have passed in following examinations	Candidate should have competed the term and filled examination form
Semester - I	Degree Examination	-
Semester - II	-	Semester – I

5. Without prejudice to the other provisions of Ordinance No. 6 relating to the Examinations in General, the provisions of Paragraphs 5, 7, 8, 10, 26 and 31 of the said Ordinance shall apply to every collegiate candidate.

6. The fees for the examination shall be as prescribed by the Management Council from time to time and whenever any change is made in the fees prescribed for any particular examination that shall be notified through a notification for information of the examinees concerned.

With the issuance of this Direction, The Direction No 44 of 2016 (Choice Based Credit System) shall stand repealed.

Nagpur
Date : 29.08.2017

Sd/-
Dr. S. P. Kane
Vice-Chancellor

7. Teaching and Examination Scheme

Post Graduate Diploma in Computer Commercial Applications (PGDCCA)

(A) PGDCCA Part-I

Semester – I

Course Code	Subjects	Paper	Teaching Scheme per weeks (hr)	End Sem Examination	Min Marks	Internal Assessment	Min Marks	Credits
Theory								
1T1	Fundamental of Information Technology	I	4	80	40	20	10	4
1T2	Programming in C & OOPs Concept	II	4	80	40	20	10	4
1T3	Introduction to Operating Systems	III	4	80	40	20	10	4
1T4	Computerized Accounting (Tally ERP 9)	IV	4	80	40	20	10	4
Practical								
1P1	Practical-I :Programming in C & Operating Systems	P-I	8	100	50	Nil	Nil	4
1P2	Practical-II :Tally (ERP 9)& MS-Office	P-II	8	100	50	Nil	Nil	4
	Total		32	520		80		24

Notes:

1. Duration of one Theory period is 1 hour and of Practical period is 2 hour.
2. The candidate has to pass theory papers and practical paper separately.
3. One credit is equivalent to one hour of Teaching or two hours of Practical Work per week.
4. Each semester will consist of 15 – 18 weeks of Academic Work equivalent to 90 actual teaching days.
5. The odd semester may be scheduled from July to December and even semester from January to June.

(B) PGDCCA Part-I

Semester – II

Course Code	Subjects	Paper	Teaching Scheme per weeks (hr)	End Sem Examination	Min Marks	Internal Assessment	Min Marks	Credits
Theory								
2T1	Management Information Systems	I	4	80	40	20	10	4
2T2	Core Java	II	4	80	40	20	10	4
2T3	Quantity Techniques & Operation Research	III	4	80	40	20	10	4
2T4	E-Commerce and Web Designing	IV	4	80	40	20	10	4
Practical								
2P1	Practical-I :Core Java	P-I	8	100	50	Nil	Nil	4
2P2	Practical-II : HTML, JavaScript	P-II	8	100	50	Nil	Nil	4
Project								
2P3	Project	Project	8	100	50	Nil	Nil	4
	Total		40	620		80		28

Notes:

1. Duration of one Theory period is 1 hour and of Practical period is 2 hour.
2. The candidate has to pass theory papers and practical paper separately.
3. One credit is equivalent to one hour of teaching or two hours of practical Work per week.
4. Each semester will consist of 15 – 18 weeks of academic Work equivalent to 90 actual teaching days.
5. The odd semester may be scheduled from July to December and even semester from January to June.
8. In order to pass the examination, an examinee shall obtain not less than 50 % marks in each of the theory papers and each of the practical and the project and Internal Assessment (Sessional) separately.
 - (A) An examinee who is unsuccessful in the examination shall be eligible for admission to the subsequent examinations on payment of a fresh fee prescribed for the examination together with the conditions of the ordinance in force from time to time.
9. (A) The scope of the subjects and pattern of examination shall be as indicated insyllabi.

(B) The Medium of instructions and examinations shall be in ENGLISH only.

10. Applicant for PGDCCA Examination prosecuting regular course of study shall not be permitted to join any other course in this or any other University.

11. **ASSESSMENT**

- The final total assessment of the candidates is made in terms of an internal assessment (Sessional) and an external assessment for each course.
- For each paper, 20 marks will be based on internal assessment and 80 marks for semester end examination (external assessment), unless otherwise stated.
- The division of the 20 marks allotted to internal assessment of theory papers should be based on class test, attendance, project assignments, seminar, power point presentation, fieldwork, group discussions or any other innovative practice / activity as determined by the teacher in respective subject and moderated by Head of the Institute/Principal.

Sr. No	Parameters	Max. Marks
1	Internal Marks on the basis of Class Attendance	05
2	Internal Marks on the basis of Class Assignment / Test	05
3	Internal Marks on the basis of Students Seminar / Students Lecture Forum	05
4	Internal Marks on Students Overall Performance	05
Total Internal Assessment Marks		20

- There shall be no separate / extra allotment of workload to the concerned teacher. He/ She shall conduct the internal assessment activity during the regular teaching days / periods as a part of regular teaching activity.
- At the beginning of each semester, every teacher shall inform his / her students unambiguously the method he / she propose to adopt and the scheme of marking for internal assessment with the prior permission of HOD / principal.
- An unsuccessful examinee at any internal shall be eligible for reexamination on payment of fresh examination fee prescribed by the University as per the respective directions.
- The internal marks will be communicated to the University at the end of each semester, but before the semester end examinations. These marks will be considered for the declaration of the results.
- The record of internal marks, evaluation & result should be maintained for a period of one year by respective institute/college for verification by competent authority.

- The maximum and minimum marks which each subject carries in PGDCCA Semester – I and Semester - II Examination are as indicated in Paragraph 7. A and B respectively.
- A copy of Project work shall be submitted to college prior to commencement of Semester - II Examination for Evaluation by Internal and External Examiner appointed as per University rules.
- Candidate shall submit his/her declaration that the Project is a result of his/her own work and the same has not been previously submitted to any examination of this University or any other University.
- The Practical Examination of each Semester will be conducted by Internal and External Examiner appointed as per University rules.
- If an examinee failed to pass the PGDCCA Post Diploma within three successive years from the date of his/her first admission to particular programme he/she shall be declared as “**Not Fit for the Course**” (NFC) and he/she will not be allowed to appear further for any examination of the course.

STANDARD OF PASSING

- Every candidate must secure 50% marks in each head of passing.
 - The passing marks for external examination will thus be 40 out of 80 and for internal examination, 10 out of 20 and aggregate marks taking both together will be 50 marks.
 - There shall be no internal marks in Practical and Project Examination.
11. (A) There shall be no classification of examinees successful at the PGDCCA Semester – I and Semester – II Examinations whereas SGPA will be notified.

*** Conversion of Marks to Grades and Calculations of SGPA (Grade Point Average) and CGPA (Cumulative Grade Point Average):** In the Credit and Grade Point System, the assessment of individual Courses in the concerned examinations will be on the basis of marks only, but the marks shall later be converted into Grades by some mechanism wherein the overall performance of the Learners can be reflected after considering the Credit Points for any given course. However, the overall evaluation shall be designated in terms of Grade. There are some abbreviations used here that need understanding of each and every parameter involved in grade computation and the evaluation mechanism. The abbreviations and formulae used are as follows:-

Abbreviations and Formulae Used

G: Grade

GP: Grade Points

C: Credits

CP: Credit Points

CG: Credits X Grades (Product of credits & Grades)

SGPA = ΣCG : Sum of Product of Credits & Grades points / ΣC : Sum of Credits points

SGPA: Semester Grade Point Average shall be calculated for individual semesters.
(It is also designated as GPA)

CGPA: Cumulative Grade Point Average shall be calculated for the entire Programme by considering all the semesters taken together.

After calculating the SGPA for an individual semester and the CGPA for entire programme, the value can be matched with the grade in the Grade Point table as per the ten (10) Points Grading System and expressed as a single designated GRADE such as O, A+, A, B+, B, etc.

Marks	Grade	Grade Points
85 and above	O (Outstanding)	10
75 - 84	A+ (Distinction)	9
71 - 74	A (Very Good)	8
61 - 70	B+ (Good)	7
55 - 60	B(Above Average)	6
50 - 54	C (Average)	5
00 - 49	F (Fail)	0
	AB (Absent)	0

A student obtaining Grade F shall be considered failed and will be required to reappear in the examination.

- (B) Division at the PGDCCASemester - II Examination shall be declared based on the aggregate marks at the PGDCCASemester – I and Semester – II Examination taken together and the CGPA will be calculated and notified.
- (C) Successful examinees at the PGDCCA Semester - II Examination shall be awarded division based on CGPA as follows:

CGPA Range	Final Grade	Equivalent Class/ Division
9.01 to 10.00	O	First Division (Outstanding)
8.01 to 9.00	A+ (Distinction)	First Division(Distinction)
7.01 to 8.00	A(Very Good)	First Division (Very Good)
6.01 to 7.00	B+(Good)	First Division (Good)
5.55 to 6.00	B(Above Average)	Second Division (Above Average)
5.00 to 5.54	C(Average)	Second Division (Average)
0.00 to 4.99	F (Fail)	Fail
0	AB(Absent)	Absent

12. Successful examinees in the PGDCCASemester Examination shall be awarded Distinction in each subject in which examinees obtain 75% or more marks in that subject at the respective Examination.

13. Unsuccessful examinees at the above examinations can be readmitted to the same examination on payment of a fresh fee and such other fees as may be prescribed by university.
14. Provisions of ordinance No 3 of 2007, relating to the award of grace marks for passing an examination, securing higher division / class and for securing distinction in subject(s) shall be applicable.
15. Notwithstanding anything to the contrary in this Direction, no person shall be admitted to an examination under this Ordinance, if he/ she has already passed the same examination or an equivalent examination of any other University.
16. Examinees successful at PGDCCASemester – I and Semester - II Examination shall on payment of the prescribed fees receive a Degree in the prescribed form signed by the Vice-Chancellor.
17. This Scheme shall come into force from the academic session 2016-17.
18. The Provisions of Ordinance No. 21 of 1994 governing the existing course for Post Graduate Diploma in Computer Commercial Applications (PGDCCA) stands repealed physically on implementation of this Direction.

APPENDIX –A

QUESTION PAPER PATTERN

First / Second / Third / Fourth Semester Post Graduate Diploma in Computer Commercial Applications (PGDCCA) Examination Choice Based Credit System (CBCS)

Subject Name

Paper - I

Time: 3 Hours

Total Marks: 80

- N. B. - a) Draw well labeled diagram wherever necessary.
b) All questions are compulsory.

Part - A

- N. B. – 1. Each question carries two marks.
2. Answers should not more than five lines.

Q1.

8 x 2 =

16

- A. }
B. } Unit - I
- C. }
D. } Unit - II
- E. }
F. } Unit - III
- G. }
H. } Unit - IV

Part - B

- N. B. – 1. Each question carries three marks.
2. Answers should not more than ten lines.

Q2.

8 x 3 =

24

- A. }
B. } Unit - I
- C. }
D. } Unit - II
- E. }
F. } Unit - III
- G. }
H. } Unit - IV

Part - C

- N. B. – 1. Each question carries five marks.

2. Answers should not more than 400 words for 5 marks questions and 600 words for 10 Marks questions respectively.

Q3.	Either			
	(A)	}	Unit - I	5
	(B)			5
	(C)			10
			OR	
Q4.	Either			
	(A)	}	Unit - II	5
	(B)			5
	(C)			10
			OR	
Q5.	Either			
	(A)	}	Unit - III	5
	(B)			5
	(C)			10
			OR	
Q6.	Either			
	(A)	}	Unit - IV	5
	(B)			5
	(C)			10
			OR	

APPENDIX –B

(A) Project and Classification of Marks on Project

Towards the end of the second year of study, a student will be examined in the course “Project Work”.

- a. Project Work may be done individually or in groups (Maximum 3 students) in case of bigger projects. However if project is done in groups, each student must be given a responsibility for a distinct module and care should be taken to monitor the progress of individual student.
- b. The Project Work should be done using the tools covered in Post Graduate Diploma in Computer Commercial Applications (PGDCCA).

- c. The Project Work should be of such a nature that it could prove useful or be relevant from the commercial / management angle.
- d. The project work will carry 100 marks.
- e. Project Work can be carried out in the Institute or outside with prior permission of the Institute.
- f. The external viva-voce examination for Project Work would be held as per the Examination Time Table of the second year of study, by a panel of one external and one Internal Examiner.

Types of Project

As majority of the students are expected to work out a project in some industry/research and development laboratories/educational institutions/software export companies, it is suggested that the project is to be chosen which should have some direct relevance in day-to-day activities of the candidates in his/her institution. The Applications Areas of project - Financial/Marketing/Database Management System/ Relational Database Management System/E-Commerce /Internet/ Manufacturing/ web Designing / Scientific / ERP etc.

Project Proposal (Synopsis)

The project proposal should be prepared in consultation with the guide. The project guide must be a person having minimum Qualification MCM/ M.Sc. (Computer Science + Information Technology)/ M.Sc. (Mathematics /Electronics/Statistics/Physics + Post B.Sc. Diploma in Computer Science& Application)/MCA. The project proposal should clearly state the objectives and environment of the proposed project to be undertaken. It should have full details in the following form:

Format of Synopsis for Desktop Application

1. Title of the Project.
2. Objectives of the Project.
3. Project Category (DBMS/RDBMS/OOPSetc.).
4. Tools/Platform and Languages to be used.
5. Complete Structure of the System:
 - i. Numbers of Modules and its Description.
 - ii. Modular Chart / System Chart.
 - iii. Data Structures or Tables.
 - iv. Process Logic of each Module.
 - v. Types of Report Generation.
6. References.

Note: Synopsis should not be more than 3-4 pages.

Format of Synopsis for Web Application

1. Title of the Project.
2. Objectives of the Project.

3. Project Category (DBMS/RDBMS/OOPSetc.).
4. Tools/Platform and Languages to be used.
5. Complete Structure of the System:
 - i. Number of pages and links their short description.
 - ii. Use / Information of Pages.
 - iii. Feedback Form (if any).
6. References.

Note: Synopsis should not be more than 3-4 pages.

Project Report Formulation

Front Page.

College Certificate Page.

Declaration Page.

Acknowledgment Page.

Project Profile.

Index or Content Page.

- i. *Contents _____.

Appendices

- i. List Figures, Tables & Charts.
- ii. Approved copy of Synopsis.

Glossary

*** Contents.**

- i. Introduction.
- ii. Objectives.
- iii. Preliminary System Analysis.
 - Preliminary Investigation.
 - Present System in Use.
 - Flaws in Present System.
 - Need of New System.
 - Feasibility Study.
 - Project Category.
- iv. Software Engineering Paradigm Applied
 - Modules
 - System / Modular Chart.
- v. Software & Hardware Requirement Specification.
- vi. Detailed System Analysis.
 - Data Flow Diagram.
 - Numbers of Modules and Process Logic.
 - Data Structures and Tables.
 - Entity-Relationship Diagram.
- vii. System Design.
 - Form Design.
 - Source Code.

- Input screen & Output Screen.
- viii. Testing & Validation Checks.
- ix. System Security Measures.
- x. Implementation, Evaluation and Maintenance.
- xi. Future Scope of the project.
- xii. Suggestion & Conclusion
- xiii. Bibliography & References.

Note :-

- i. A Student is expected to complete the Assignments based on Syllabus of Practical subjects and submit the same in the form of a files (assignment Record) at the end of Academic Session for the evaluation purpose.
- ii. A student should submit internal assessment of each theory paper prescribed by the subject teacher.
- iii. A Student is expected to deliver a seminar on any course curricular subject / latest trends in IT relevant subject per semester for internal assessment.

Classification Of Marks on Project :-

Report & Documentation	40
Viva voce (External)	40
Viva voce (Internal)	20
Total Marks	
	100

The marks of Project shall be notified as a whole out of 100 in Foil/C-Foil.

(B) Practical and Classification of Marks on Practical

1. Practical exam shall be of 4 hours duration.
2. The Practical Record of every student shall carry a certificate as shown below, duly signed by the teacher-in-charge and the Head of the Department.
3. If the student fails to submit his / her certified Practical Record duly signed by the Teacher-In-Charge and the Head of the Department, he / she shall not be allowed to appear for the Practical Examination and no Marks shall be allotted to the student.
4. After Viva-Voce and evaluation of practical records of a student by the Internal & External Examiner, both examiners should sign on the certificate of practical records.
5. The certificate template shall be as follows:

Name of the college / Institution

Name of the Department:

CERTIFICATE

This is to certify that Mr./Mrs./Ms. _____
of class PGDCCA Part _____ Semester _____ has satisfactorily completed the
practical experiments prescribed by Rastrashant Tukdoji Maharaj Nagpur University for the
subject _____ during the academic year _____.

Signature
Practical In-charge Head of the Department

Signature

Signature
Internal Examiner

Signature
External Examiner

Date: _____

Classification Of Practical Marks :-

	Practical – I	Marks
1.	Writing a Program or Problem (Algorithm & Flowchart)	40
2.	Execute on a computer	
3.	Taking Hard Copy	
	Practical – II	
1.	Writing a Program or Problem (Algorithm & Program)	20
	Viva Voce	20
	Practical Record	20
<hr/>		
	Total Marks	100

The marks of Practical shall be notified as a whole out of 100 in Foil/C-Foil.

APPENDIX –C

Absorption Scheme PGDCCA

It is notified for general information of all concerned that the failure students of **PGDCCA Old Course (Semester Pattern)** shall be absorbed in the **New Course CBCS Pattern** introduced from the session 2016-2017 Examination with the following scheme.

- 1) The Failure students of **PGDCCA (Semester – I & Semester - II)** as per Old Course (Semester Pattern) **appeared in Sum 2016** should clear their backlog papers of PGDCCA (Semester – I & Semester - II) **till Winter 2017**. If they fail to complete & pass till Winter 2017, then they will have to appear in parallel papers of New Course CBCS Pattern (Choice Based Credit System) as per absorption scheme indicated in Appendix - D.

APPENDIX –D

(A) PGDCCA (Semester - I)

Old Course (Semester Pattern) → New Course CBCS Pattern (Choice Based Credit System)

Sr. No	Old Course (Semester Pattern)	M. Marks	Sr. No	New Course CBCS Pattern (Choice Based Credit System)	Max Marks
Semester – I					
Theory			Theory		
I	Fundamental of Information Technology	80	1T1	Fundamental of Information Technology	80
II	Programming in C	80	1T2	Programming in C & OOPs Concept	80
III	Introduction to Operating Systems	80	1T3	Introduction to Operating Systems	80
IV	Computerized Accounting (Tally)	80	1T4	Computerized Accounting (Tally ERP 9)	80
Practical			Practical		
P - I	Practical - I : Programming in C & Operating Systems	100	1P1	Practical - I : Programming in C & Operating Systems	100
P - II	Practical -II : Tally & MS-Office	100	1P2	Practical - II : Tally (ERP 9) & Ms-Office	100

(B) PGDCCA (Semester - II)

Old Course (Semester Pattern) → New Course CBCS Pattern (Choice Based Credit System)

Sr. No	Old Course (Semester Pattern)	M. Marks	Sr. No	New Course CBCS Pattern (Choice Based Credit System)	Max Marks
Semester – II					
Theory			Theory		
I	Management Information Systems and Software Engineering	80	2T1	Management Information Systems	80

II	Visual Basic Programming	80	2T2	Core Java	80
III	Principles & Techniques of Management	80	2T3	Quantity Techniques & Operation Research	80
IV	E-Commerce and Web Designing	80	2T4	E-Commerce and Web Designing	80
Practical			Practical		
P - I	Practical-I : Visual Basic	100	2P1	Practical-I :Core Java	100
P - II	Practical-II : HTML, JavaScript	100	2P2	Practical-II : HTML, JavaScript	100

APPENDIX – C

PGDCCA Part-I

Semester-I

Paper - I: Fundamental of Information Technology (1T1)

Unit – I

Computers: Introduction to computers, Characteristics of computer, Evolution of computer, Generations of computer, Basic organization of computer system (Block Diagram), Functioning of computer, Concept of system. **Number system:** non-positional number systems, Positional number systems, Conversion from one number system to another, Fraction numbers. **Computer codes:** BCD, EBCDIC, ASCII, Unicode, Collating sequence. **Computer arithmetic:** Need of binary, Binary arithmetic.

Unit – II

Processor & memory: Central processing unit (CPU), Components of CPU (CU, ALU, Instruction set, Registers, Processor speed, Type of processor), Main memory, Types of memory. **Secondary storage devices:** Sequential & direct access devices, Magnetic tapes, Magnetic disks, Optical disks, Memory storage devices, Mass storage devices, Data backup, On-line, Near line and Off-line storage, Hierarchical storage devices(HSS), Input-output devices.

Unit – III

Computer software: Define software, Types of software, Logical system architecture, Firmware, Middleware, Acquiring software, Software development life cycle (SDLC), Software engineering, CASE tools. **System implementation & operation:** Software testing & debugging (Types of program errors, Testing a program, Debugging a program for syntax errors & logical errors, Difference between testing & debugging), Software documentation, Software deployment, System evaluation, Software maintenance. **Business data processing:** Meaning of data processing, Data storage hierarchy, Standard methods of organizing data, File management system, Database management system.

Unit – IV

Data communication and computer networks: Basic elements of a communication system, Data transmission modes, Data transmission speed, Data transmission media, Digital & analog data transmission, Data transmission services, Multiplexing techniques, Switching techniques, Routing techniques, Network topologies, Types of network, Communication protocols, Network interface card (NIC), OSI model, Ernet working tools, Wireless Networks. **Multimedia:** What is multimedia, Multimedia components, Multimedia applications, and media center computer. **Classification of computers:** Notebook computers (Laptops), Personal computer (PCs), Workstations, Mainframe systems, Super computers, Client & server computers, Handheld computers (Tablet PC, PDA/Pocket PC, Smartphone).

Text Book:

1. P. K. Sinha & Priti Sinha, Computer Fundamentals, BPB Publication.

Reference Books:

1. Madhulika Jain, Shashank Jain, Satish Jain, Information Technology Concepts, BPB Publication.
2. B. Ram, Computer Fundamentals (Architecture & organization), New Age International Publisher.
3. Turban, Rainer, Potter, Introduction to Information Technology, Wiley India Edition.
4. Peter Norton, Introduction to Computers, McGraw-Hill Education.
5. S. Jaiswal, I.T. Today, Encyclopedia.

Practical List of Fundamental of Information Technology

- A1. Use a contemporary letter template of MS-WORD and provide information about launching of new products of a company.
Also write down the steps to perform above in MS-WORD.
- A2. Use a professional letter template of MS-WORD and write an application to the principal for two days leave.
Also write down the steps to perform above in MS-WORD.
- A3. Using Mail Merge of MS-WORD, write a letter to the students of PGDCCA-I to submit their Original Documents (Mark Sheet, Migration Certificate, TC etc) along with their balance fees up to 10th March 2008 in the office of the college during office timings morning 8:00 AM to 5:00 PM.
Also write down the steps to perform above in MS-WORD.
- A4. Using Mail Merge of MS-WORD, write a letter to your friends, invite them on your Birth Day Party on 10th March 2008 at the Venue- B04, Amar Apartment, Narendranagar, Nagpur-440021
Also write down the steps to perform above in MS-WORD.
- A5. Using Mail Merge of MS-WORD, write a letter to all the selected candidate for their final interview on 10th March 2008 at the Centre Point College, 7 Nawab Layout, Tilaknagar, Nagpur-10 at 11:00 AM along with all original documents and 2 passport size photographs.
Also write down the steps to perform above in MS-WORD.
- A6. Draw and Analyze the DFD of Book Issuing System of College Library in MS-PowerPoint.
Also write down the steps to perform above in MS-POWERPOINT.
- A7. Draw and Analyze the DFD of Hotel Management System in MS-PowerPoint.
Also write down the steps to perform above in MS-POWERPOINT.
- A8. Draw and Analyze the DFD of Examination Management System in MS-PowerPoint.
Also write down the steps to perform above in MS-POWERPOINT.
- A9. Create a Mark-Sheet of PGDCCA-Part I using MS-Excel. Mark-Sheet format should be as per below. Fill the information about 10 students.

Roll No.	Name of Student	IT (100)	ICP (100)	IOS (100)	C (100)	MIS&SA (100)	Practical -I (100)	Practical-II (100)	Total Marks (Out of 700)	% age
1										

Draw a pie chart for above Mark-sheet

Also write down the steps to perform above operation in MS-EXCEL.

- A10. Create a Employee Payment Sheet using MS-Excel. Employee Payment Slip format should be as per below. Fill the information about 10 employees.

Sr.No.	Name of Employee	Basic Salary	HRA 5%	TA 7%	DA 9%	Gross_Salary
1						
<u>Total salary</u>						

Draw a bar chart for above Employee Payment Sheet

Also write down the steps to perform above operation in MS-EXCEL.

- A11. Create the following Product sheet in MS-EXCEL and perform the operation given below:

Sr.No.	Product Name	Company Name	Country	Quantity	Rate
1	Butter	Amul India ltd	India	20	Rs.19.00
2	Milkmaid	Amul India ltd	India	10	Rs.35.00
3	Tea	Hindustan Lever ltd	Malaysia	15	Rs.40.00
4	Biscuits	Parle ltd	India	32	Rs.12.00
5	Papad	Haldiram ltd	India	12	Rs.10.00
6	Chocolate	Cadbury ltd	Australia	150	Rs.15.00
7	Paneer	Amul India ltd	India	23	Rs.25.00
8	Bournvita	Cadbury ltd	Australia	20	Rs.45.00
9	Poppins	Parle ltd	India	27	Rs.6.00
10	Sauce	Amul India ltd	India	16	Rs.21.00

a) Sort by Product Name, by company name, by country in ascending order.

b) Sort by Country in descending order.

Also write down the steps to perform above operation in MS-EXCEL.

- A12. Create the following Product sheet in MS-EXCEL and perform the operation given below:

Sr.No.	Product Name	Company Name	Country	Quantity	Rate
1	Butter	Amul India ltd	India	20	Rs.19.00
2	Milkmaid	Amul India ltd	India	10	Rs.35.00
3	Tea	Hindustan Lever ltd	Malaysia	15	Rs.40.00
4	Biscuits	Parle ltd	India	32	Rs.12.00
5	Papad	Haldiram ltd	India	12	Rs.10.00
6	Chocolate	Cadbury ltd	Australia	150	Rs.15.00
7	Paneer	Amul India ltd	India	23	Rs.25.00
8	Bournvita	Cadbury ltd	Australia	20	Rs.45.00
9	Poppins	Parle ltd	India	27	Rs.6.00
10	Sauce	Amul India ltd	India	16	Rs.21.00

a) List only those records whose country ="India".

b) List only those records whose company name="Amul".

Also write down the steps to perform above operation in MS-EXCEL.

- A13. Create the following Product sheet in MS-EXCEL and perform the operation given below:

Sr.No.	Product Name	Company Name	Country	Quantity	Rate
1	Butter	Amul India ltd	India	20	Rs.19.00
2	Milkmaid	Amul India ltd	India	10	Rs.35.00
3	Tea	Hindustan Lever ltd	Malaysia	15	Rs.40.00
4	Biscuits	Parle ltd	India	32	Rs.12.00
5	Papad	Haldiram ltd	India	12	Rs.10.00
6	Chocolate	Cadbury ltd	Australia	150	Rs.15.00
7	Paneer	Amul India ltd	India	23	Rs.25.00
8	Bournvita	Cadbury ltd	Australia	20	Rs.45.00
9	Poppins	Parle ltd	India	27	Rs.6.00
10	Sauce	Amul India ltd	India	16	Rs.21.00

a) List the records whose quantity is ≥ 10 and ≤ 100 .

b) List the records whose rate is \geq Rs. 35.00.

Also write down the steps to perform above operation in MS-EXCEL.

- A14. By the help of following information prepare cost sheet for the month of March 1980:

Rs.

1. Stock (1-3-1980)	
a) Raw Materials	25,000
b) Finished goods	17,360
2. Stock (31-3-1980)	
a) Raw Materials	26,250
b) Finished goods	15,750
3. Raw material purchased	21,900
4. Work-in-progress (1-3-80)	8,220
5. Work-in-progress (31-3-80)	9,100
6. Sale of finished goods	72,310
7. Direct wages	17,150
8. Unproductive Wages	830
9. Factory Expenses	8,340
10. Office and management expenses	3,160
11. Selling and distribution expenses	4,210

Prepare cost sheet and find out following information:

1) Total Cost 2) Cost of goods sold 3) Profit on sold out goods

Also write down the steps to perform above operation in MS-EXCEL.

- A15. Following information is received from the books of a factory:

1. Closing stock of raw materials	25,150
2. Closing stock of finished goods	14,650
3. Raw materials purchased	20,800
4. Work in progress (1-1-78)	8,220
5. Work in progress (31-12-78)	8,000
6. Opening stock of raw material	24,000
7. Opening stock of finished goods	16,200
8. Sale of finished goods	62,800
9. Office expenses	2,150
10. Selling and Distribution expenses	4,000
11. Direct wages	16,000
12. Factory expenses	9,000

Prepare cost sheet and find out the following items:

- 1) Cost of materials consumed
- 2) Production Cost
- 3) Cost of goods sold
- 4) Net profit.

Also write down the steps to perform above operation in MS-EXCEL.

- A16. By the help of following information prepare a statement of cost and in that statement indicate prime cost, works cost, office cost (production cost) and cost of goods sold, for the half year ending 30th June, 1978. Production 500 units.

1. Material consumed	30,000
2. Direct Wages	40,000
3. Direct Expenses	4,000
4. Works on Cost Expenses	
a) Unproductive wages	9,000
b) Factory lighting and heating	11,000
c) Factory rent, rates and insurance	3,000
d) Factory Director's fees	
e) Depreciation of machinery	1,500
f) Factory stationery	375
g) Factory cleaning	400
h) Depreciation of loose tools	900
i) Indirect material	500
j) Estimating expenses	500
5. Office expenses (Office overhead)	
a) Director fees	3,000
b) Office printing and stationery	750
c) Legal Expenses	500
d) Depreciation of office building	800
e) Bank fee	75
f) Salary of office employees	5,000
6. Selling and Distribution expenses	
a) Selling commission	1,000
b) Rent of warehouse	1,800
c) Bad debt	150
d) Advertisement	500
e) Depreciation and maintenance of delivery vans	700

Also write down the steps to perform above operation in MS-EXCEL.

- A17. Prepare cost sheet by the help of following information and find out (i) Prime cost (ii) Factory cost (iii) Total Cost; (iv) Net Profit.

1. Raw Material purchased	66,000
2. Direct wages	52,500
3. Indirect wages	2,750
4. Stock of Raw Materials (1-9-83)	75,000
5. Stock of Raw material (30-9-83)	91,500
6. Stock of finished goods (1-9-83)	54,000
7. Stock of finished goods (30-9-83)	31,000
8. Stock of work in progress (1st Sep.83)	28,000
9. Stock of work in progress (30th sept.83)	35,000
10. Sales	2,11,000
11. Rent, rates and electric of factory	15,000
12. Depreciation of machinery	3,500
13. Carriage inward	1,500
14. Sundry factory exp.	10,000
15. Travelling wages and commission	6,500
16. Office rent and rates	2,500
17. Sundry Office expenses	6,500
18. Advertisement	3,500
19. Carriage outward exp. (exp. on sale)	2,500

Also write down the steps to perform above operation in MS-EXCEL.

A18. By the help of following information prepare cost sheet for the year 1976.

1. Opening Stock (1-1-1976)	
a) of Raw Materials	22,000
b) of Unfinished goods	5,000
c) of Finished goods	10,000
2. Closing Stock: (31-12-76)	
a) of Raw Materials	2,350
b) of Unfinished goods	3,000
c) of Finished goods	2,000
3. Direct Wages	30,000
4. Direct Expenses	10,000
5. Material Purchased	70,500
6. Carriage Inward	2,000
7. Factory on cost	70,000
8. Factory Supervision	8,800
9. Office Rent	6,000
10. Factory Rent	9,000
11. Rent of sales department	6,000
12. Lighting bill (out of this 30% of factory, 20% of sales dept. and balance for office)	10,000
13. Advertisement	6,000
14. Salary of Manager (30% of Factory, 40% of Sales dept. and balance for office)	37,000
15. Profit 10% on total cost.	

Also write down the steps to perform above operation in MS-EXCEL.

A19. Following information is available from the books of Zenith manufacturing company as on 31st Dec. 1974.

1. Salary of Drawing room staff	6,500
2. Salary of distribution department	12,600
3. Outward carriage expenses	4,300
4. Cash discount	2,900
5. Inward carriage exp. on purchase	7,150
6. Bad debts written off	6,500
7. Machine repairing	4,450
8. Rent, taxes and insurance (Factory)	8,500
9. Rent, taxes and insurance (office)	2,000
10. Sales	4,61,100
11. Stock of Raw material (31-12-73)	62,800
12. Stock of Raw material (31-12-74)	48,000
13. Material Purchased	1,85,000
14. Travelling Expenses	2,100
15. Salary and Commission of travelling agent	7,700
16. Productive wages	1,26,000
17. Depreciation of machinery & equipment	6,500
18. Depreciation of office furniture	300
19. Director fee	6,000
20. Gas and Water (Factory)	1,200
21. Gas and Water (Office)	400
22. Salary of manager (3/4 for factory & 1/4 for office)	10,000
23. General Expenses	3,400
24. Income tax	1,500
25. Dividend	1,000

Prepare cost sheet and indicate the following items:-

1) Materials Consumed (2) Prime cost (3) Factory on cost and factory cost (4) General and selling overhead (5) Total cost (6) Net profit (7) Percentage of factory on cost to wages (8) percentage of general overhead to factory cost.

Also write down the steps to perform above operation in MS-EXCEL.

- A20. From the given information prepare Flexible budget for the capacity 70%, 80% & 100 % & show the results.

The sales for the above capacity would be 50,00,000/-, 60,00,000/-, 85,00,000 respectively. Fixed expenses will be constant at all capacities. Semi variable will be constant between 55% to 75% capacity.

It will be increased by 10% between the capacity 75% to 90% & will be increased by 20% between the capacity 90% & 100%. Following exp are on the capacity of 60%.

Particulars	Rs.
Semi variable exp:	
Maintenance & repairs	1,25,000
Labour	5,00,000
Sales dept. Expenses	1,50,000
Other overheads	<u>1,25,000</u>
	<u>9,00,000</u>
Variable Cost :	
Material	12,00,000
Labour	13,00,000
Other Expenses	<u>2,00,000</u>
	<u>27,00,000</u>
Fixed Cost :	
Wages & salaries	4,20,000
Rent & Taxes	2,80,000
Depreciation	3,50,000
Other overheads	<u>4,50,000</u>
	<u>15,00,000</u>
Total Cost	<u>51,00,000</u>

Also write down the steps to perform above operation in MS-EXCEL.

- A21. The following data is taken from the manufacturing record of a company for 1/2 year period.

Fixed expenses:	
Wages & salaries	84,000
Rent, rates & taxes	56,000
Depreciation	70,000
Sundry administration Exp.	<u>89,000</u>
	<u>2,99,000</u>
Semi-variable exp : (at 50% capacity)	
Maintenance & Repairs	25,000
Indirect Labour	99,000
Sales Department salaries	29,000
Sundry administration exp.	<u>26,000</u>
	<u>1,79,000</u>
Variable Exp. (at 50% capacities)	
Materials	2,40,000
Labour	2,56,000
Other expenses	<u>38,000</u>
	<u>5,34,000</u>

Assume that the fixed expenses remain constant for all levels of production. Semi- Variable expenses remain constant between 45% & 65% of capacity. Increasing by 10% between 65% & 80% capacity & by 20% between 80% & 100% of capacity. Sales at various levels are :-

Capacity	Rs.
60%	10,00,000

75%	12,00,000
90%	15,00,000
100%	17,00,000.

Prepare Flexible budget for the above capacity.
Also write down the steps to perform above operation in MS-EXCEL.

- A22. The following budget is prepared for 10,000 units. Per unit cost will be as under :-

Particulars	P.U. (Rs.)
Material	60
Wages	55
Fixed cost (2,00,000)	20
Variable expenses	5
Selling expenses (10% fixed)	15
Administration exp. (90,000)	9
Distribution exp. (20% fixed)	15

Prepare budget for 7,500 & 6,500 units.
Also write down the steps to perform above operation in MS-EXCEL.

- A23. The following figures are available from sales & cost forecast of M/s ALANKAR & Co. for the year ended 31st.Dec. 1990 at 50% (5,000 units) capacity. Prepare a profit forecast statement through flexible budget at 60%, 75%, 90% & 100% capacity assuming that

- 1) The fixed expenses remain constant for all levels of production & sales.
- 2) Selling price between 50% & 75% capacity is Rs. 25/- per unit.
- 3) Semi variable expenses will remain unchanged at 50% & 65% capacity but will increase by 10% between 65% to 80% capacity & by 30% between 80% & 100% capacity.
- 4) At 90% level (capacity) material Cost increase by 5% & Selling Price is reduced by 5%.
- 5) At 100% level both material & labour cost increase by 10% & selling Price is reduced by 8%.
- 6) Semi variable expenses are Rs. 50,000 /-
- 7) Fixed expenses are Rs. 50,000/-
- 8) Variable expenses are :

Material	Rs. 5 p.u.
Labour	Rs. 2 p.u.
Direct Exp.	Rs. 1 p.u.

Also write down the steps to perform above operation in MS-EXCEL.

- A24. Prepare Flexible budget & find out overhead rate.

Particulars	50%	60%	70%
	Rs.	Rs.	Rs.
Variable Overheads			
A) Material	---	60,000	---
B) Labour	---	24,000	---
Semi-Variable Exp.			
1) Electric (20% fixed)	---	15,000	---
2) Repairs & Maint. (20% variable)	---	7,500	---
Fixed Expenses			
a) Depreciation	---	20,000	---
b) Rent & tax	---	2,250	---
c) Insurance	---	2,500	---
d) Salary	---	15,000	---
e) Indirect wages	---	8,000	---
Budgeted Direct labour hours	---	30,000	---

Also write down the steps to perform above operation in MS-EXCEL.

- A25. Estimated cash balance on 1st may 1990 Rs. 2,50,000 From the following information Prepare Cash budget for the month of may, June, July 90.

Month	Sales	Purchase	Wages	Manu. Exp.	Office Exp.	Selling Exp.
March	50,000	30,000	6,000	5,000	4,000	3,000
April	56,000	32,000	6,500	5,500	4,000	3,000
May	60,000	35,000	7,000	6,000	4,000	3,500
June	80,000	40,000	9,000	7,500	4,000	4,500
July	90,000	40,000	9,500	8,000	4,000	4,500

Adjustments :-

- Out of total sale 20% sales in cash & balance will be collected in the next month.
- Suppliers allowed the credit period of 2 months.
- Wages and all other exp. will be paid in the following months.
- Dividends to share holders & Bonus to employees will be paid in the month of may Rs. 10,000 & Rs. 15,000 Respectively.
- An order of machine is given, the cost of which is Rs. 80,000, Machine will be received in the month of June & payment will be done in same month.
- Income tax will be paid Rs. 25,000/- in the month of July.

Also write down the steps to perform above operation in MS-EXCEL.

- A26. From the following information Prepare Cash budget for the 3 months ending 30th June.

Month	Sales	Materials	Wages	Overheads
Jan	60,000	40,000	11,000	6,200
Feb.	56,000	48,000	11,600	6,600
Mar.	64,000	50,000	12,000	6,800
Apr.	80,000	56,000	12,400	7,200
May	84,000	62,000	13,000	8,600
June	76,000	50,000	14,000	8,000

- Payment of material & overheads will be done in the following month.
- Payment of wages will be done in the same month.
- Terms & conditions of sales as under :- Half amount of credit sales will be recovered in following months & balance amount will be recovered in the next month of the following month.
- Dividend on Preference shares Rs. 30,000/- will be paid on 1st may.
- The amount of share call each Rs. 25,000/- will be received on 1st April & of 1st June each.
- Machines costing Rs. 10,000/- will be established in the month of January but payment will be done in the month of June.
- The selling commission 5% will be paid in the following months of actual sales.
- On 1st April Expected Cash balances Rs. 20,000/-

Also write down the steps to perform above operation in MS-EXCEL.

- A27. From the following information Prepare Cash budget for 3 months commencing from 1st June. On 1st June Cash balance is Rs. 1,00,000/-

Month	Sales	Purchase	Wages	Manu. Exp	Selling & Admn. exp.
April	80,000	41,000	5,600	3,900	10,000
May	76,500	40,500	5,400	4200	1400
June	78500	38500	5400	5100	15000
July	90,000	37,000	4,800	5,100	17000
Aug.	95,500	35,000	4,700	6,000	13000

Additional Information :-

- 1) Commission on sales 5% will be paid after 2 months of the sales. (This commission is in addition of Selling Exp.)
 - 2) Machine Costing Rs. 65,000/- will be purchased in the month of April but payment will be done in the month of August.
 - 3) Dividend of last year Rs. 15,000/- will be paid in the month of July.
 - 4) Lag time allowed to customers for the payment is 2 months, and 2 months credit period allowed from suppliers.
- Also write down the steps to perform above operation in MS-EXCEL.

A28. Budgeted information given as under :-

Month	Sales	Purchases	Wages Exp.	Manu. Exp.	Office Exp.	Selling
Mar.	50,000	30,000	5,000	1,000	1,000	6,000
April	60,000	35,000	6,000	4,000	2,000	7,000
May	70,000	37,000	7,000	2,000	3,000	8,000
June	80,000	42,000	8,000	4,000	3,000	9,000
July	90,000	60,000	9,000	3,000	2,000	15,000
Aug	1,00,000	70,000	11,000	4,000	1,000	20,000

Additional Information :-

- 1) Cash balance on 1st may Rs. 80,000/-
 - 2) 20% sales in cash & out of total Credit sales 50% amount Recovered in the following month & balances 50% in the next month of the following month.
 - 3) Suppliers allowed a credit period of 2 months.
 - 4) Lag time for wages 1/2 month.
 - 5) Delay in payment of office expenses 1 month.
 - 6) Delay in payment of manufacturing exp. 1 month.
 - 7) Amount of shares call money will be received in the months of may Rs. 50,000/-
 - 8) Payment of tax will be done in July Rs. 80,000/-.
 - 9) Machine will be purchased in June Rs. 20,000/-.
- Prepare Cash Budget for May, June, & July.

Also write down the steps to perform above operation in MS-EXCEL.

A29. A newly established Company wants to prepare Cash budget for four months ending on 30th June.

Month	Sales	Materials	Wages	Overheads	Selling&Admn. Exp
Jan	20,000	20,000	4,000	3,200	800
Feb.	22,000	14,000	4,400	3,300	900
Mar.	24,000	14,000	4,600	3,300	800
Apr.	26,000	12,000	4,600	3,400	900
May	28,000	12,000	4,800	3,500	900
June	30,000	16,000	4,800	3,600	1,000

Adjustment :-

- 1) Expected Cash balance on 1st March Rs. 10,000/-.
- 2) A machinery is Purchased for Rs. 30,000/- payment will be done in two equal instalments March & April.
- 3) Selling Commission 5% on total sales & this commission will be paid in the following months of actual sales.
- 4) Amount of 2nd call will be received in the month of march Rs. 10,000/- & Amount of share premium Rs. 2,000/- will be received with 2nd call.
- 5) Period allowed to customer for payment is 1 month.
- 6) Remaining all other exp. will be paid in the following months.
- 7) The delay in the payment of wages 1/2 month.
- 8) You may presume that 50% sales are in cash.

9) Suppliers allowed period of 2 months for payment.

Also write down the steps to perform above operation in MS-EXCEL.

A30. By the help of following information prepare cost sheet for the month of March 1980:

1. Stock (1-3-1980)	
a) Raw Materials	25,000
b) Finished goods	17,360
2. Stock (31-3-1980)	
a) Raw Materials	26,250
b) Finished goods	15,750
3. Raw material purchased	21,900
4. Work-in-progress (1-3-80)	8,220
5. Work-in-progress (31-3-80)	9,100
6. Sale of finished goods	72,310
7. Direct wages	17,150
8. Unproductive Wages	830
9. Factory Expenses	8,340
10. Office and management expenses	3,160
11. Selling and distribution expenses	4,210

Prepare cost sheet and find out following information:

1) Total Cost 2) Cost of goods sold 3) Profit on sold out goods

Also write down the steps to perform above operation in MS-EXCEL.

Paper - II: Programming in C& OOP's Concepts (1T2)

UNIT – I

Design methods, Programming language, Translators, Introduction to C, C character set and keywords, Escape sequence, Constants and variables, Data types, Conversion specification, Input and output statements in C, Operators and expressions (Arithmetic, Relational, Logical, Assignment, Ternary, Bit Wise and Increment & Decrement Operator). **Storage class:** Automatic, Static, External, Register. **Control statement:** If-else, Looping statements (while, do- while and for loop), Switch, Go-to, Use of break and continue statements.

UNIT – II

Function: Arithmetic and string library function, User defined functions, Function definition & declaration, Function call, Return statement, Function arguments, use of void, Types of function, Function with call by value and call by reference, Recursion.

Arrays: Declaration, Referring individual elements, Entering data in to an array, Reading data from array, Array initialization, Printing of array, Searching, Sorting and merging of array. **Pointer:** Introduction to pointer, Pointer and function, pointer and structure, Pointer and array, Pointer and string. **Dynamic memory allocation:** Sizeof (), malloc (), calloc (), realloc(), free().

UNIT – III

String: String manipulation using string library function, **Structure:** Declaration structure, initializing structure, Structure variables, accessing structure elements, Arrays of structure, Array within structure. **Unions:** Concept and applications. **Files:** Concept of file, Modes of files, Open and close, Creation and reading of files, Character input/output function, Formatted input/output function, String input and output: scanf, sprintf, gets, puts. **File input/output:** fprintf, fscanf, getc, putc, and **Block read/write:** fread, fwrite, random access to files, Other file function, command line argument.

UNIT – IV

Introduction to OOP, Characteristics of OOP's, Advantages & disadvantages of OOP's, Steps in developing the OOP Program, Object Oriented Languages, Importance of C++, Classes and objects, Member function, Concept of overloading, Inheritance & types of inheritance, Data abstraction, Data encapsulation, Concept of polymorphism and virtual function, Namespace and exception handling.

Text Books:

1. S. K. Shrivastava & Dipali Srivastava, C in Depth, BPB Publication.
2. D. Ravichandran, Programming with C++, McGraw-Hill.

Reference Books:

1. Steve Oualline, Practical C Programming, SPD, O'Reilly.
2. Harshal Arolkar, Simplifying C, Dreamtech Press.
3. Dr. S. Dey & Mridul Ghosh, Computer Fundamentals and C Programming, SPD.
4. Yashwant Kanetkar, Let Us C, BPB Publication.
5. Veugopal Prasad, Mastering C, McGraw-Hill.
6. Balguruswamy, Programming in ANSI C, McGraw-Hill.
7. E. Balguruswamy, Object Oriented Programming with C++, McGraw-Hill.

Practical List of Programming in C& OOP's Concepts

1. Write an algorithm, draw a flowchart and develop 'C' program to compute the factors of a given number.
2. Write an algorithm, draw a flowchart and develop 'C' program to interchange the values of two numbers without using any temporary variable.
3. Write an algorithm, draw a flowchart and develop 'C' program to calculate and find the nature of roots of given quadratic equation.
4. Write an algorithm, draw a flowchart and develop 'C' program to check given number is prime number.
5. Write an algorithm, draw a flowchart and develop 'C' program to calculate LCM & HCF of two numbers.
6. Write an algorithm, draw a flowchart and develop 'C' program to reverse an n digit number.
7. Write an algorithm, draw a flowchart and develop 'C' program to calculate sum of odd digits and product of even digits of a given n digit number.
8. Write an algorithm, draw a flowchart and develop 'C' program to check a given number is an Armstrong number.
9. Write an algorithm, draw a flowchart and develop 'C' program to convert a decimal number into its equivalent binary number.
10. Write an algorithm, draw a flowchart and develop 'C' program to display the Fibonacci series of n terms.

11. Write an algorithm, draw a flowchart and develop 'C' program to print the following output:-
- ```

1
1 2
1 2 3
1 2 3 4
1 2 3 4 5
1 2 3 4
1 2 3
1 2
1

```
12. Write an algorithm, draw a flowchart and develop 'C' program to display the following pattern;-
- ```

1          1
1 2      2 1
1 2 3  3 2 1
1 2 3 4 3 2 1

```
13. Write an algorithm, draw a flowchart and develop 'C' program to calculate the series of n terms for x as;-
 $S = x + x^2 + x^3 + x^4 + \dots$
14. Write an algorithm, draw a flowchart and develop 'C' program to calculate the sum of the n terms of the series;-
 $S = 1/2! + 2/3! + 3/4! + 4/5! + \dots$
15. Write an algorithm, draw a flowchart and develop 'C' program to display the following pattern:-
- ```

 1
 2 3 2
 3 4 5 4 3
 4 5 6 7 6 5 4
 5 6 7 8 9 8 7 6 5

```
16. Write an algorithm, draw a flowchart and develop 'C' program to insert an element in an array at appropriate position.
17. Write an algorithm, draw a flowchart and develop 'C' program to sort the given array using bubble sort.
18. Write an algorithm, draw a flowchart and develop 'C' program to find the transpose of a given matrix.
19. Write an algorithm, draw a flowchart and develop 'C' program to check whether the given word is palindrome or not.
20. Write an algorithm, draw a flowchart and develop 'C' program to count vowels in given word using switch statement.

21. Write an algorithm, draw a flowchart and develop 'C' program to count number of letters, words and blank spaces in a given line.
22. Write an algorithm, draw a flowchart and develop 'C' program to find largest and smallest element of given array using function concept.
23. Write an algorithm, draw a flowchart and develop 'C' program to find factorial of given number using recursion function.
24. Write an algorithm, draw a flowchart and develop 'C' program to find reverse of digits of given number using recursion concept.
25. Write an algorithm, draw a flowchart and develop 'C' program to swap the values of two array using user defined function. Use the concept "Call by Value" and "Call by Reference".
26. Write an algorithm, draw a flowchart and develop 'C' program to find and replace a numeric value from an array using function and pointer.
27. Write an algorithm, draw a flowchart and develop 'C' program to Create a structure Student containing fields for Roll No., Name, Class, Year and Total Marks. Create 10 students and store them in a file.
28. Write an algorithm, draw a flowchart and develop 'C' program to create a file "abc.txt" and store the text. Copy the content from "abc.txt" to another file "xyz.txt" using putc() and getc() function. Also read the content of both files.
29. Write an algorithm, draw a flowchart and develop 'C' program to write and read the 'n' records as an entire block (structure) on a file using fwrite() and fread(). The block structure contains Roll Number and Name of the Students.
30. Write an algorithm, draw a flowchart and develop 'C' program to copy the content of one file to another file by using command line argument.

### **Paper-III: Introduction to Operating Systems (1T3)**

#### **UNIT – I**

**Introduction** – What operating systems do, Computer system organization, Computer system architecture, Operating system architecture, Operating system operations, Process management, Memory management, Storage management, Protection & Security, Kernel data structures, Computing environments, Open source operating systems. **System Structures** – Operating system services, User and operating system interface, system calls, types of system calls.

#### **UNIT – II**

**Process Management** – Process concept, Process Scheduling, Operations on processes, Interprocess Communication. Deadlocks – Deadlock characterization, Deadlock prevention, Deadlock Avoidance. **Memory Management Strategies** – Background, Swapping, Contiguous memory Allocation, Segmentation, Paging. **File System** – File concept, File system mounting, File sharing.



## **UNIT – III**

### Introduction to Disk Operating System (DOS)

- File types, Directory Structure
- Booting - Warm and Cold Booting
- Types of DOS commands (Internal and External)
- Introduction of Autoexe and Config files.
- Directory commands: DIR, MD, RD, TREE, PATH, SUBST ETC.
- Wild card Definitions
- Commands related to file management: COPY, DEL, ERASE, REN, ATTRIB, XCOPY, BACKUP and RESTORE .
- General commands: TYPE DATE, TIME, PROMPT etc.
- batch commands, wild card characters & its use.

## **UNIT – IV**

### Introduction to Unix overview

- File systems and structure of directories and file
- File Oriented Commands – Cat, cp, mv, rm etc.
- File Permissions
- Directory Oriented commands – ls, mkdir, rmdir, cd, pwd etc.
- Inter user connection commands – write, mail, used, at, wall etc.
- Common commands – skill, date, wo, sleep, who ps.
- Unix Utility Commands – grep, pr, cut, paste, sort, lp shutdown, halt, sys, tar, find etc.
- Basics of shell scripts
- Writing shell scripts, running scripts, using variables, controlling the flow of statement
- Introduction of Linux.

### **Text Books:**

1. Abraham Silberschatz, Peter Galvin, Gerg Gagne, Operating System Concepts, Wiley.
2. Robert M. Thomas, DOS 6 & 6.2, BPB Publications.
3. Yashavant Kanetkar, Unix Shell Programming, BPB Publications.

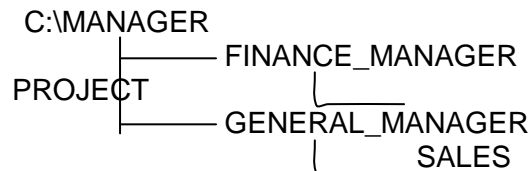
### **Reference Books:**

1. Tanenbaum, Modern Operating Systems, PHI.
2. Stuart E. Madnick, John J. Donovan, Operating Systems, McGraw-Hill.
3. Dhananjay M. Dhamdhare, Operating Systems, McGraw-Hill
4. Sumitabha Das, Unix Concepts & Applications, McGraw-Hill.
5. Kernighan & Pike, The Unix Programming Environment, PHI.
6. Christopher Negus, Ubuntu Linux Toolbox, Wiley.
7. S. Jaiswal, DOS / Unix & Windows: IT Today, Encyclopedia.
8. Burnett, Using Linux: Tackett, PHI.
9. MS-DOS Manual.

### **Practical List of Introduction to Operating Systems**

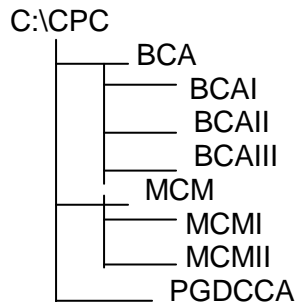
1. Make a directory naming VMV in DOS. Under that make three sub directories BCAI, BCA II, BCAIII. Also explain the commands used in making the directories and subdirectories in DOS.

2. Using Tree Command in DOS make the following tree diagram



Also explain the commands used in making the above tree diagram.

3. Using tree command in DOS makes the following tree diagram



Also explain the commands used in making the above tree diagram.

4. Make a file named “compute.txt” in DOS and write the definition and characteristics of computer in that file. Rename the file compute.txt to computer.txt. Also explain the commands used in making the file and renaming file. Explain the difference between copy and ren Command.
5. Make a file named “compute.txt” in DOS and write the definition and characteristics of computer in that file. Copy the contents of file compute.txt to computer.txt. Also explain the commands used in making the file and copying the contents of one file to another file.
6. Make a file named file1.txt in DOS and enter the following text in that file.  
WWW can be defined as a set of standards for storing, retrieving, formatting and displaying information using client/server architecture, graphical user interfaces and a hypertext language that enables dynamic link to documents. World Wide Web is a repository of information spread all over the world and linked together.
7. Write a shell script in UNIX to calculate area of a triangle.
8. Write a shell script in UNIX to calculate area and circumference of a circle.
9. Write a shell script in UNIX to calculate the simple interest.
10. Write a shell script in UNIX to calculate the total marks and percentage of five subjects.
11. Write a shell script in UNIX to calculate largest and smallest number among three numbers.
12. Write a shell script in UNIX to calculate the gross salary of an employee. The salary includes – Basic Salary, HRA (20% of Basic Salary), DA (20% of Basic Salary) and CCA (10% of Basic Salary).
13. Write a shell script in UNIX to enter the two strings and then compare the two strings. If strings are equal then display the message “Strings are Equal” else “Strings are not Equal”.

14. Write a shell script in UNIX to check whether the given file is directory or ordinary file.
15. Write a shell script in UNIX to check entered character is in uppercase or in lowercase.
16. Write a shell script in UNIX to check whether the entered number is EVEN or ODD.
17. Write a shell script in UNIX to check whether the entered number is prime or not.
18. Write a shell script in UNIX to print the Fibonacci series.
19. Write a shell script in UNIX to calculate the factorial of a given number.
20. Write a shell script in UNIX to calculate reverse a number.
21. Write a shell script in UNIX to find sum of digits of a number.
22. Write a shell script in UNIX to implement Break statement.
23. Write a shell script in UNIX to search whether element is present is in the list or not.
24. Write a shell script in UNIX to copy contents of one file to another.
25. Write a shell script in UNIX to count number of files in a directory.
26. Write a shell script in UNIX to implement FCFS Algorithm.

#### **Paper - IV: Computerized Accounting (TALLY ERP 9) (1T4)**

##### **UNIT - I**

**Accounting Basics** - Defining the need for accounting, Defining accounting, Exploring the branches of accounting, Describing the functions of accounting, Listing the advantages of accounting, Listing the limitations of accounting, Explaining important terms in accounting, Exploring the concepts of accounting, Understanding the conversions of accounting, Describing an account and its types, Explaining the rules of debit and credit, Describing a journal, Describing a ledger, Describing trial balance, Describing a financial entries, Understanding adjustment entries.

**Introduction to Tally.ERP 9** – Features of Tally, Enhancement in Tally.ERP 9, Installation procedure of Tally.ERP 9, Opening Tally.ERP 9, Components of the Tally.ERP 9 window, Creating a Company.

##### **UNIT - II**

**Stock and Godown in Tally.ERP 9** – Stock groups, Stock categories, Stock items, Units of measure, Godowns. **Group, Ledgers, Vouchers and Orders** – Introducing groups, Introducing ledgers, Introducing vouchers, Introducing purchase orders, Introducing a sales order, Introducing invoices.

##### **UNIT - III**

**Reports in Tally.ERP 9** – Working with balance sheet, Working with profit & loss A/c report, Working with stock summary report, Understanding ratio analysis, Working with trial balance report, Working with day book report. **Payroll** – Exploring payroll in Tally.ERP 9, Required features to create a pay slip, Description of payroll info, Working

with payroll vouchers, Defining payroll reports, working with statements of payroll report, Describing salary disbursement.

#### **UNIT - IV**

**Taxation** – Indian Tax Structure, Tax deducted at source in tally.ERP 9, Create a Tax Ledger, TDS Vouchers, Printing a TDS Challan, Tax collected at source in Tally.ERP 9, TCS reports in Tally.ERP 9, Calculating VAT in Tally.ERP 9, VAT Classification, VAT Vouchers, VAT Reports in Tally.ERP 9, Service Tax.

#### **Text Book:**

1. Vikas Gupta, Business Accounting with MS Excel and Tally.ERP 9 Course Kit, Dreamtech Press.

#### **Reference Books:**

1. Computerized Accounting using Tally ERP 9, Sahaj Enterprise, Tally Education Private Ltd (TEPL).
2. Vishnu Priya Singh, Tally 9.
3. K. K. Nadhani, Accounting with Tally, BPB Publication.
4. K. K. Nadhani and A.K. Nadhani, Tally Tutorial, BPB Publication.
5. Anthony R. N. and J. S. Richard, Accounting Principles, Irwin Inc.

### **Practical List of Computerized Accounting (TALLY ERP 9)**

#### **1. Create a company in Tally ERP 9 with the following details:**

|                               |                                                    |
|-------------------------------|----------------------------------------------------|
| Name of company               | Universal Company Ltd.                             |
| Address                       | 1804, world Tower, AB road, Baner, Pune<br>_411080 |
| Country                       | India                                              |
| State                         | Maharashtra                                        |
| Contact number                | 7894561230                                         |
| Mobile number                 | 7741258963                                         |
| Email-Id                      | info@universalmfg.co.in                            |
| Books beginning from          | 01-04-2015                                         |
| Financial year Beginning from | 01-04-2015                                         |

#### **2. Create a company in Tally ERP 9 with the following details:**

|                               |                                                                    |
|-------------------------------|--------------------------------------------------------------------|
| Name of company               | Sambhav trading Company                                            |
| Address                       | a/512, palm court, girgaam chaupaty, charni<br>road, Mumbai-400007 |
| Country                       | India                                                              |
| State                         | Maharashtra                                                        |
| Contact number                | 022-22886512                                                       |
| Mobile number                 | 9898745555                                                         |
| Email-Id                      | enquiry@sambhav.com                                                |
| Books beginning from          | 01-04-2014                                                         |
| Financial year Beginning from | 01-04-2014                                                         |

**3. Create the following ledgers in the books of universal company ltd in Tally ERP 9.**

| Name of ledger           | Under (group)    | Bill wise details set to | Opening balance |
|--------------------------|------------------|--------------------------|-----------------|
| Share capital            | Capital account  | No                       | 15,00,000       |
| Purchase account         | Purchase account | No                       | Nil             |
| Sales accounts           | Sales accounts   | No                       | Nil             |
| Ultra tech cement ltd    | Sundry creditors | yes                      | 270000          |
| Building                 | Fixed assets     | No                       | 1200000         |
| Computers                | Fixed assets     | No                       | 50000           |
| Office furniture         | Fixed assets     | No                       | 175000          |
| Cash in hand             | Cash accounts    | No                       | 20000           |
| Civic centre association | Sundry debtors   | yes                      | 290000          |
| Bank of india            | Bank accounts    | No                       | 80000           |
| Petty cash               | Cash in hand     | No                       | 50000           |

**4. Create the following ledgers in the books of universal company ltd in Tally ERP 9.**

| Name of ledger           | Under (group)    | Bill wise details set to | Opening balance |
|--------------------------|------------------|--------------------------|-----------------|
| Proprietors Capital      | Capital Account  | No                       | 10,00,000       |
| Purchase Account         | Purchase Account | No                       | Nil             |
| Sales Accounts           | Sales Accounts   | No                       | Nil             |
| Hindustan Lever Ltd      | Sundry creditors | yes                      | 355000          |
| Land and Building        | Fixed Assets     | No                       | 850000          |
| Computers and Peripheral | Fixed Assets     | No                       | 30000           |
| Office Furniture         | Fixed Assets     | No                       | 75000           |
| Cash in hand             | Cash Accounts    | No                       | 18000           |
| Tahuraa Traders Pvt Ltd  | Sundry Debtors   | yes                      | 310000          |
| Bank of Baroda           | Bank Accounts    | No                       | 102000          |

**5. Record the following vouchers in the books of Universal company ltd.**

- 04-04-2014 withdrawn Rs. 20000 from bank of india and transferred to petty cash book.
- 08-04-2014 paid 2000 from petty cash for buying stationery for office.
- 15-04-2014 made purchase from ultra tech cement ltd. Worth Rs. 45000
- 19-04-2014 issued cheque to ultra tech cement ltd for Rs. 45000
- 21-04-2014 sold goods worth of Rs. 75000 to civic centre association
- 25-04-2014 received a cheque from civic center association for Rs. 75000. The same was deposited in the bank on the same date.
- 30-04-2014 paid staff salary of Rs. 9800 from petty cash.

**6. Record the following vouchers in the books of Sambhav Trading Co. Pvt. Ltd.**

- 02-04-2014 withdrawn RS. 10000 From bank of baroda and transeferred to petty cash book.
- 05-04-2014 paid 1000 from petty cash for office expences.
- 11-04-2014 made purchase from Hindustan unilever ltd. Worth Rs. 33000
- 13-04-2014 Issued cheque to Hindustan Unilever Ltd. For Rs. 20000

- e. 14-04-2014 Made purchase from Hindustan Unilever Ltd. Worth Rs. 26000
- f. 18-04-2014 Issued cheque of Rs. 38000 to Hindustan Unilever Ltd.
- g. 21-04-2014 sold goods worth of Rs. 90000 to Tahuraa Traders Pvt Ltd.
- h. 22-04-2014 received a cheque from Tahuraa Traders Pvt Ltd. For Rs. 75000 .  
The same was deposited in the bank on the same date.
- i. 23-04-2014 sold goods worth of rs. 85000 to Tahuraa Traders Pvt Ltd.
- j. 25-04-2014 received cheque from Tahuraa Traders Pvt Ltd. From Rs.75000.  
The same was deposited in the bank on the same date.
- k. 30-04-2014 Paid staff salary of Rs. 7200 from petty cash.

**7. Create cost centers Project A and Project B under primary cost category and record the following transaction in the books of sambhav trading company**

- a. On 07-09-2014, purchased Cement worth Rs. 1, 50,000/- from Ultratech cement Ltd. That will be shared equally between Project A and Project B . A credit period of 30 days was provided.
- b. Record transaction on 09-09-2014 for the purchase of Steel worth Rs. 450000 from Embee Enterprises. Allocate Rs. 50000 to Project A and the the rest to Project B . a credit period of 45 days was allowed.

**8. Create cost centers Mumbai and Pune under primary cost category and record the following transaction in the books of Universal co. Limited**

- a. On 05-10-2014, purchases done worth Rs. 2, 50,000/- from Hindustan Unilever Ltd. That will be shared equally between Mumbai and Pune.
- b. Record transaction on 09-10-2014 for the purchase worth Rs. 600000 from Hindustan Unilever Ltd. Allocate Rs. 250000 to Mumbai and the rest to Pune. . a credit period of 45 days was allowed.
- c. On 18-10-2014 record a transaction for the sale on Super technologies for Rs. 1575000/- of which 1200000 would be allocated to Mumbai branch and the rest to Pune.
- d. On 22-10-2014 one more sales entry was made for 1600000 to Super technologies of which 10,00,000 was allocated to pune branch and the rest to Mumbai.

**9. Record the following transaction in the books of Universal Co. Ltd.**

- a. On May 11, 2014 they received a bill no. May /005/2014 for a sum of Rs. 125000/- from M/s. Rajesh shah and Co., architects for consultancy towards designing their office and training centre.
- b. Universal company Ltd. Made the payment after deducting the TDS amount.
- c. On 27<sup>th</sup> May 2014, company received bills no May/015/2014 for a sum of Rs. 75000 from M/s Rajesh shah and co., architects for consultancy.
- d. On 28<sup>th</sup> May, company made the payment after deducting TDS.

**10. Journalize the following Transaction in the books of Mr. Anil for the month of March 2012 and prepare Trial balance**

| March 2010 | Particular                | Amt   |
|------------|---------------------------|-------|
| 1          | Start business with cash  | 80000 |
| 3          | Purchase goods for cash   | 5000  |
| 4          | Purchase goods from Akash | 9000  |
| 6          | Sold goods to Vikas       | 7000  |
| 7          | Return goods to Akash     | 700   |
| 9          | Goods return by Vikash    | 400   |
| 11         | Cash paid to Raman        | 4000  |
| 17         | Withdrew from Bank        | 10000 |
| 20         | Wage paid                 | 1000  |

**11. Akhilesh started his business on 1<sup>st</sup> Jan. 2012 with Rs.5000, his transaction for the month were as following, prepare Cash A/C.**

| January 2012 | Particular                                  | Amt  |
|--------------|---------------------------------------------|------|
| 1            | Bought goods on credit from Sachine & Sons  | 5000 |
| 5            | Paid salary                                 | 500  |
| 10           | Sold to Roy                                 | 2000 |
| 15           | Cash sales                                  | 2200 |
| 19           | Cash Purchase                               | 3000 |
| 25           | Deposit in Bank                             | 1000 |
| 27           | Goods returned to Sachine & Sons            | 500  |
| 31           | Cash Withdrawn by Akhilesh for personal use | 500  |

**12. Journalize the following transactions in the books of Sudhir Kumar 2003 and prepare a Trial Balance :**

| Jan 2003 | Particular                                   | Amt   |
|----------|----------------------------------------------|-------|
| 1        | Sudhir Commenced business with cash          | 40000 |
| 3        | Purchased goods for cash                     | 500   |
| 5        | Sold goods for cash                          | 300   |
| 6        | Purchased one Motor Car for cash             | 15000 |
| 9        | Sold Machinery for cash                      | 9000  |
| 11       | Purchased a Building on credit from Narendra | 20000 |
| 15       | Sold Furniture on credit to Randhir Kappor   | 9500  |
| 17       | Paid Cartage                                 | 110   |
| 22       | Received Commission                          | 50    |
| 27       | Cash Sales                                   | 1200  |
| 29       | Cash Purchase                                | 600   |
| 30       | Received on account from Ahmed               | 350   |
| 31       | Paid cash to Sunitkumar on account           | 190   |

**13. Journalize the following transactions in the books of Royal & Co. and prepare a Trial Balance :**

| Nov. 2003 | Particular                                                           | Amt    |
|-----------|----------------------------------------------------------------------|--------|
| 1         | Cash invested in Business                                            | 150000 |
| 2         | Cash deposited In to SBI Current A/C                                 | 30000  |
| 3         | Goods Purchased in cash                                              | 20000  |
| 4         | Goods Sold in cash                                                   | 12000  |
| 5         | Commission received Rs. 500 from Sushma Traders                      |        |
| 6         | Goods Sold on credit to Roshan                                       | 25000  |
| 7         | Goods return from Roshan                                             | 5000   |
| 8         | Depreciation charged on Machine @ 12% for four month<br>Machine Cost | 45000  |
| 10        | Cheque received from Roshan                                          | 10000  |
| 11        | Salary Paid                                                          | 1500   |

**14. Journalize the following transaction in the books of Sanjay Potdar for the month of March 2012.**

- Ashok starts business with Rs. 100000/-
- Purchase machinery for Rs. 50000/ and furniture for Rs. 10000
- Paid amount for rent Rs. 1000/
- Deposits Rs.,. 10000/- in Bank
- Purchase of goods for Rs. 20000/ from Mr. Ram on credit.
- Sold goods to Mr. Rakesh for Rs. 10000/
- Rs. 5000/ withdraws from bank for personal use.
- Withdraws Rs. 1000/ for office use.
- Received cash from Mr. Rakesh.
- Paid to Mr. Ram.

**15. Record the following transaction in the books of Raj enterprises.**

1. Goods purchase from "Kirti sales" on credit Bill no. 115 Rs. 62000
  - a. Color tv (lg) 4% 3qty Rs. 30000
  - b. Washing machine (samsung) 4% 4 qty Rs. 32000
2. Cash received from sangam enterprises Rs. 15000
3. Goods purchase in cash bill no. 69 Rs. 35000
  - a. B/W tv (sony) 4% 4 qty Rs. 20000
  - b. Audio (onida) 4% 5 qty Rs. 15000
4. Goods sale on cash rs, 19000
  - a. Color tv (lg) 4% 1 qty Rs. 15500
  - b. Audeo (onida) 4% 1 qty Rs. 3500
5. Goods purchase in cash from vikram enterprises bill no. 45 Rs. 40000
  - a. Color tv (lg) 4% 2 qty Rs. 20000
  - b. Refrigerator (vedeocon) 4% 2qty Rs. 20000
6. Cheaque no. received from ravi agency Rs. 10000 and deposited in state bank.
7. Credit sale to vijay enterprises bill no. 93 Rs.17200
  - a. Washing machine (samsung) 4% 1qty Rs. 8000
  - b. B/W tv (sony) 4% 1 Qty Rs. 5700
  - c. Audio (onida) 4% 1 qty Rs. 3500
8. Cash paid to ravi kulkarni rs. 1500
9. Cheque no. 159 paid to central engineering co. Rs 15000
10. Refrigerator purchase on cash Rs. 30000 fom k k agency 3 qty (videocon) 4%
11. Office rent paid in cash Rs. 1700
12. Received cheque from vijay enterprises Rs. 10000 & deposited in canara bank.
13. Bill received from lokmat Rs. 1500 bill no.5
14. Amount received from vaishali agency in cash rs. 5000 & cheque no. 336791 Rs. 10000 only. Cheque deposited in state bank.
15. Cash sale to telco ltd. Rs. 29900
  - a. Color tv (Lg) 4% 1 qty Rs. 10000
  - b. Washing machine (samsung) 4% 1 qty Rs. 9100
  - c. Refrigerator (vedeocon) 4% 1qty Rs. 10800
16. Cheque deposited in canara bank Rs.5000
17. Cash withdrawn from bank Rs. 34000

**16. Record the following transaction in the books of Maharashtra Traders.**

1. Opening stock for Wadi Godown
  - a. Akai color Tv 4% 10 qty Rs.10500 each.
  - b. Refrigerator (videocon) 7qty 12000 each.
  - c. Washing machine (samsung) 5 qty 8000 each
  - d. Audio (Philips) 4% 2Qty 2000
  - e. Onida color tv 4% 5 qty 12000 each
  - f. B/W tv (akai) 4% 5 qty 18000
2. Opening stock for nandanwan godown
  - a. Akai color tv 2 qty 10500 each
  - b. refrigerator (videocon) 3qty 12000 each
  - c. Audio (Philips) 3 qty 1000 each.
3. Cash sale to Bhagwandas Co. Rs. 41500 in wadi godown.
  - a. Color tv (akai) 4% 2 qty Rs.21000.
  - b. Refrigerator (Vedeocon) 4% 1qty Rs. 11300
  - c. Washing Machine (samsung) 4% 1 qty Rs. 9200.



4. Goods purchase in cash from national Trading co. & store Nandanwan godown.
  - a. Audio (Philips) 2qty 4% Rs.6000
  - b. W/M (Samsung) 1qty 4% Rs. 10000
5. Credit sales to Ravina traders Rs. 51800 wadi godown.
  - a. Refrigerator (vedeocon) 2qty 4% Rs. 22000.
  - b. W/M (Samsung) 1qty 4% Rs.8300
  - c. Color tv (akai) 2qty 4% 21500
6. Cheque received from vikas enterprises Rs. 20000 & deposited in state bank.
7. Cash withdrawn from state bank cheque no. 16 Rs. 15000/-
8. Received loan from state bank Rs. 10,00,000/- invested in business, interest 10%.
9. Cheque paid to kirti sales rs. 25000/-
10. Goods purchase on credit from rama & sons Rs. 44000 store nandanwan.
  - a. W/M (Lg) 3 qty 4% Rs. 24000
  - b. Refrigerator (videocon) 1qty 4% Rs. 10000.
  - c. Color tv (onida) 1qty 45 Rs. 10000
11. Akai color TV purchase in cash Rs. 20000 2qty 4% Rao store in nandanwan.
12. Paid salary Rs. 10000
13. Paid bank loan Rs. 8,00,000
14. Cash sale on wadi godown Rs 42000\
  - a. Audio 2 qty 4% Rs.7000
  - b. w/m (s.s.) 2qty 4% Rs. 17000
  - c. b/w tv (akai) 3qty 4% Rs. 18000
15. Paid to rama & sons by cheque rs. 18000 chq. No. 1152.
16. Paid electric bill Rs. 10000
17. Total cash sale after allowing discount Rs. 1000.
18. Paid total balance loan on state bank.
19. Advertisement exp. Rs.10000
20. Carriage exp. Rs. 5000
21. Purchase furniture for nandanwan godown Rs.28000 in cash.
22. Withdrawn for personal use Rs, 10000.

**17. Record the following transaction in the books of Rathore Traders.**

1. Goods purchase from sohan & sons Rs. 20000/-
  - a. Gold 10gm (12.5%) rs. 10000/-
  - b. Silver 1kg (12.5%) Rs.10000/-
2. Goods purchase from sagar computer Rs. 25000/-
  - a. Monitor (compaq) 1qty 5000/- 4%
  - b. Cpu (intel) 1qty 15000/- 4%
  - c. Speaker (Logitex) 1qty 5000/- each
3. Goods sold on cash Rs. 22000/-
  - a. Gold (12.5%) 10gm 12000/-
  - b. Silver(12.5%) 1kg 10000/-
4. Withdrawn 400/- Rs. From canara bank.
5. Cash given to sagar computers Rs. 24000/- in full settlement.
6. Cheque given to mr. sohan & sons. Rs 20000.
7. Salary given to mr. sahil Rs. 2000/-
8. Withdrawn Rs. 4000/-
9. Paid insurance premium Rs. 200/-
10. Purchase table without vat Rs.2000/-

# PGDCCA Part-I

## Semester-II

### Paper - I: Management Information Systems (2T1)

#### UNIT - I

##### **Strategic View of MIS:**

**Management information system in a digital firm:** Management Information System (MIS): Concept, Definition, Role of MIS, Impact of the MIS, MIS and the user, Management as a control system, MIS: A support to the management, Management effectiveness and MIS, Organization as a System, MIS: Organization Effectiveness, MIS for a digital firm. **E-Business Enterprise:** A digital firm - Introduction, Organization of business in a digital firm, E-Business, E-Commerce, E-Communication, E-Collaboration, Real Time Enterprise.

**Strategic Management Of Business Performance:** Concept of corporate planning, Essentiality of strategic planning, Development of the business strategies, Types of strategies, Short range planning, Tools of planning, Strategic analysis of business, Balance score card, Score card and dash board, MIS: Strategic business planning.

**Information security challenges in E-Enterprises:** Introduction, Security threats and vulnerability, Controlling security threats and vulnerability, Managing security threat in E-Business, Disaster management, Information security.

#### UNIT - II

##### **Basic of Management Information Systems:**

**Decision-Making:** Concept, Process, Decision analysis by analytical modeling, **Behavioral concepts in Decision - Making,** Organizational Decision Making.

**Information, Knowledge, Business Intelligence:** Information concepts, Information: A quality product, Classification of the information, Methods of data and information collection, Value of the information, General model of a human as an information processor, Summary of information concept and their implications, Knowledge and knowledge management systems, Business intelligence MIS and the information and knowledge. **System Engineering: Analysis And Design:** System concepts, System control, Types of system, Handling system complexity, Classes of systems, General model of MIS, The need for system analysis, System analysis of the existing system, System analysis of a new requirement, System development model, Structured system analysis and design (SSAD), Object oriented analysis (OOA), System development through OOT: A use case model, OOSAD development life cycle.

#### UNIT – III

**Development process of MIS:** Development of long range plans of the MIS, Ascertaining the class of information, Determining the information requirement, Development and implementation of the MIS, Management of information quality in MIS, Organization for development of MIS, MIS: Development Process Model. **Strategic**

**Design of MIS:** Strategic management of the business, Why strategic design of MIS?, Balance score card, Score card, and dash board, Strategic design of MIS, Development process steps for strategic design(SD) of MIS, illustrating SD of MIS for Big Bazaar, Strategic management of business and SD of MIS, Business strategy determination, Business strategy implementation. **Business Process Re-Engineering (BPR):** Introduction, Business process, Process model of organization, Value stream model of the organization, What delays the Business Process? Relevance of information technology (IT), MIS and BPR.

## UNIT - IV

### Applications of Management Information Systems to E-Business:

**Application in manufacturing sector:** Introduction, Personnel management (PM), Financial management (FM), Production management (PM), Raw material management(RMM), Marketing management, Corporate overview. **Application in**

**Service Sector:** Introduction to service sector, Creating a distinctive service, Service concept, Service process cycle and analysis, Customer service design, Service management system , MIS application in service industry, MIS: Service industry.

**Decision support systems and knowledge management: Decision support systems (DSS):** Concept and philosophy, Group decision support system(GDSS), DSS application in E-Enterprise, Knowledge management , Knowledge management systems, Knowledge based expert system (KBES), MIS and the benefits of DSS.

**Enterprise Management Systems:** Enterprise management systems(Ems), Enterprise resource planning (ERP) system, ERP models and modules, Benefits of the ERP, ERP product evaluation, ERP implementation, Supply chain management (SCM), Information management in SCM, Customer relationship management (CRM), EMS and MIS.

### Text Book:

1. Waman S. Jawadekar, Management Information Systems, McGraw-Hill.

### Reference Books:

1. D. P. Goyal, Management Information Systems, Vikas Publishing.
2. D. P. Nagpal, Management Information Systems, S. Chand.
3. S. Sadagopan, Management Information Systems, PHI.
4. A. K. Gupta, Management Information Systems, S. Chand.
5. Mahesh Halale, Management Information Systems, Himalaya publishing house.
6. Kanter, Managing with Information, PHI.

## Paper - II: Core Java (2T2)

### UNIT - I

**Java Evolution** - Java history, Java features, How java differ from C and C++, Java and internet, Java and world wide web, Web browsers, Hardware and software requirements, Java support systems, Java environment. **Overview of Java Language** – Introduction, Simple Java programs, More of Java, An application with two classes, Java program structure, Java tokens, Java statements, Implementing a Java program, Java virtual machine, Command line arguments, Programming style. **Constants, Variables, and Data Types** – Introduction, Constants, Variables, Data Types, Declaration of variables, Giving value to variables, Scope of variables, Symbolic constants, Type casting, Getting values of variables, Standards default values. **Operators and Expressions** - Introduction, Arithmetic operators, Relational operators, Logical operators, Assignment operators, Increment and decrement operators, Conditional operators, Bitwise operators, Special operators, Arithmetic expression, Evaluation of expression, Precedence of arithmetic operators, Type conversion in expression, Operator precedence and associativity, Mathematical functions. **Decision Making and Branching** – Introduction, Decision making with If Statement, Simple If statement, The If...Else statement, Nesting of If...Else statement, The Else If ladder, The switch statement, The? : Operators. **Decision Making and Looping** – Introduction, The while statement, The do statement, The for statement, Jumps in loops, Labeled loops.

## UNIT - II

**Classes, Objects and Methods** – Introduction, Defining a class, Fields declaration, Methods declaration, Creating objects, Accessing class members, Constructors, Method overloading, Static members, Nesting of methods, Inheritance: Extending a class, Overriding methods, Final variables and methods, Final classes, Finalizer methods, Abstract methods and classes, Methods with varargs, Visibility Controls. **Arrays, Strings and Vectors** – Introduction, One-Dimensional Array, Creating an array, Two-Dimensional Array, Strings, Vectors, Wrappers classes, Enumerated types, Annotations. **Interfaces: Multiple Inheritance** – Introduction, Defining interfaces, Extending interfaces, Implementing interfaces, Accessing interface variables.

## UNIT - III

**Packages: Putting Classes Together** – Introduction, Java API Packages, Using system packages, Naming conventions, Creating packages, Accessing a package, Using a package, Adding a class to package, Hiding classes, Static import. **Multi Threaded Programming** – Introduction, Creating threads, Extending the thread class, Stopping and blocking a thread, Life cycle of thread, Using thread methods, Thread exception, Thread priority, Implementing the 'Runnable' interface, Inter-thread communication. **Managing Errors and Exceptions** – Introduction, Types of errors, Exceptions, Syntax of exceptions handling code, Multiple catch statements, Using finally statements, Throwing our own exceptions, Improved exception handling in Java ES 7, Using exceptions for debugging.

## UNIT - IV

**Applet Programming** – Introduction, How applet differ from application, Preparing to write applet, Building applet code, Applet life cycle, Creating an executable applet, Designing a web page, Applet tag, Adding applet to HTML file, Running the applet, More about applet tag, Passing parameters to applet, Aligning the display, More about HTML tags, Displaying numerical values, Getting input from the user, Event handling. **Graphics Programming** – Introduction, The graphics class, Lines and rectangles, Circles and ellipses, Drawing arcs, Drawing polygons, Line graphs, Using controls loops in applets, Drawing bar charts, Introduction to AWT packages, Introduction to swing. **Managing Input / Output Files in JAVA** – Introduction, Concepts of streams, Streams classes, Bytes streams classes, Character streams classes, Using streams, Other useful I/O classes, Using the file classes, Input / Output exception, Creation of files, Reading/Writing character, Reading/Writing bytes, Handling primitive data types, Concatenating and buffering files, Random access file, Interactive input and output, Other stream classes. **JAVA Collections** – Introduction, Overview of interfaces, Overview of classes, Overview of algorithm.

### Text Book:

1. E. Balagurusamy, Programming with Java, McGraw-Hill.

### Reference Books:

1. Dr. R. NageswaraRao, Core Java – An Integrated Approach, Dreamtech Press.
2. Rashmi Kanta Das, Core Java for Beginners, Vikas Publishing.
3. Joel Murach, Murach's Java Programming, Shroff Publishers.
4. Sharanam Shah & Vaishali Shah, Core Java 8 for Beginners, Shroff Publishers.
5. Patrick Naughton & Herbert Schildt, JAVA 2 – The Complete Reference 3/E, McGraw-Hill.
6. B. M. Harwani, Java for Professionals, Shroff Publishers.

## Practical List of Core Java

1. Write an algorithm, draw a flowchart and develop a Java program to find the sum of any number of integers entered as command line arguments.
2. Write an algorithm, draw a flowchart and develop a Java program to perform addition, subtraction, multiplication and division using switch case statement.
3. Write an algorithm, draw a flowchart and develop a Java program to find the factorial of a given number.
4. Write an algorithm, draw a flowchart and develop a Java program to display the following pattern –

```
 *
 * *
 * * *
 * * * *
 * * * * *
```

5. Write an algorithm, draw a flowchart and develop a Java program to learn use of single dimensional array by defining the array dynamically.
6. Write an algorithm, draw a flowchart and develop a Java program to convert a decimal number to binary number.
7. Write an algorithm, draw a flowchart and develop a Java program to find the sum of any number of integers interactively, i.e., entering every number from the keyboard, whereas the total number of integers is given as a command line argument.
8. Write an algorithm, draw a flowchart and develop a Java program to Write a program that show working of different functions of String and StringBuffer classes like setCharAt(), setLength(), append(), insert(), concat()and equals().
9. Write an algorithm, draw a flowchart and develop a Java program to create a - distance class with methods where distance is computed in terms of feet and inches, how to create objects of a class and to see the use of this pointer.
10. Write an algorithm, draw a flowchart and develop a Java program to show that during function overloading, if no matching argument is found, then java will apply automatic type conversions(from lower to higher data type).
11. Write an algorithm, draw a flowchart and develop a Java program to show the use of static functions and to pass variable length arguments in a function.
12. Write an algorithm, draw a flowchart and develop a Java program to demonstrate the concept of boxing and unboxing.
13. Write an algorithm, draw a flowchart and develop a Java program to find the area of rectangle using constructor.
14. Write an algorithm, draw a flowchart and develop a Java program to demonstrate the method overloading concept.
15. Write an algorithm, draw a flowchart and develop a Java program to find even, odd, factorial of a number using inheritance.
16. Write an algorithm, draw a flowchart and develop a Java program to demonstrate the Interfaces.

17. Write an algorithm, draw a flowchart and develop a Java program to create a multilevel package and also creates a reusable class to generate Fibonacci series, where the function to generate Fibonacci series is given in a different file belonging to the same package.
18. Write an algorithm, draw a flowchart and develop a Java program that creates illustrates different levels of protection in classes/subclasses belonging to same package or different packages.
19. Write an algorithm, draw a flowchart and develop a Java program to create your own exception types to handle situation specific to your application (Hint: Define a subclass of Exception which itself is a subclass of Throwable).
20. Write an algorithm, draw a flowchart and develop a Java program to implement the concept of loading & displaying images.
21. Write an algorithm, draw a flowchart and develop a Java program to demonstrate the animation.
22. Write an algorithm, draw a flowchart and develop a Java program to demonstrate multithread communication by implementing synchronization among threads (Hint: you can implement a simple producer and consumer problem).
23. Write an algorithm, draw a flowchart and develop a Java program to create URL object, create a URLConnection using the openConnection() method and then use it examine the different components of the URLand content.
24. Write an algorithm, draw a flowchart and develop a Java program to implement a simple datagram client and server in which a message that is typed into the server window is sent to the client side where it is displayed.
25. Write an algorithm, draw a flowchart and develop a Java program that creates a Banner and then creates a thread to scrolls the message in the banner from left to right across the applet's window.
26. Write an algorithm, draw a flowchart and develop a Java program to get the URL/location of code (i.e. java code) and document(i.e. html file).
27. Write an algorithm, draw a flowchart and develop a Java program to demonstrate different mouse handling events like mouseClicked(), mouseEntered(), mouseExited(), mousePressed, mouseReleased() and mouseDragged().
28. Write an algorithm, draw a flowchart and develop a Java program to demonstrate different keyboard handling events.
29. Write an algorithm, draw a flowchart and develop a Java program to generate a window without an applet window using main() function.
30. Write an algorithm, draw a flowchart and develop a Java program to display the following output using applet -

```

A
A P
A P P
A P P L
A P P L E
A P P L E T

```

## Paper - III: Quantity Techniques & Operation Research (2T3)

### UNIT - I

**Introduction to statistics** - Origin and growth of statistics, meaning of statistics, Definitions of statistics, Characteristics of statistics, Main division of statistics, Nature of statistics: a Science or an Art, Scope of statistics, relation of statistics to other sciences, Function of statistics, Importance of statistics, Limitations of statistics, Distrust Misuse of statistics, Statistical thinking, statistical inferences. **Measures of central Tendency or Averages** - Definition and meaning of average, Qualities of good average, Types of averages, Arithmetic mean, median, Mode, geometric mean, harmonic mean, Relation among mean, median and mode, Relation among arithmetic mean, geometric mean and harmonic mean, Quartiles, deciles, and percentiles. **Measures of dispersion** - Definition of dispersion, meaning of dispersion, purpose of dispersion, quartiles of a good Measures of dispersion, Measures of dispersion, range, quartile deviation or semi-inter quartile range, mean deviation or average deviation, standard deviation or root-mean square deviation, co-efficient of variation, variance, combined standard deviation, relation among quartile deviation, mean deviation and standard deviation, Lorenz curve—graphical presentation of dispersion.

### UNIT - II

**Correlation Analysis** - Meaning of correlation, definition of correlation, usefulness of correlation analysis, types of correlation, co-efficient of correlation, measurement of correlation, probable error of co-efficient of correlation, standard error of co-efficient of correlation, co-efficient of determination, correlation ratio. **Regression Analysis** - Introduction, meaning of regression, definition of Regression, usefulness of Regression analysis, types of Regression, Regression lines, Regression equation, Regression co-efficients, standard error of estimate (SEE), ratio of variation, galton graph, limitations of Regression analysis, distinguish between correlation and Regression. **Probability Analysis** - Introduction, meaning of Probability, properties of Probability, importance of Probability, Probability related events, theorems of Probability, fundamental rules of Probability, calculation of Probability.

### UNIT - III

**Operation Research: An Introduction** – Operation Research – Quantitative approach to decision making, The history of Operation Research, Definition of Operation Research, Characteristics of Operation Research approach, Applications of Operation Research, Computer software for Operation Research. **Linear Programming: Application & Model Formulation** – Introduction, Structure of linear programming model, Advantage of using linear programming, Limitations of linear programming, Application areas of linear programming, General mathematical model of linear programming problem, Guidelines on linear programming model formulation, Example of linear programming model formulation. **Linear Programming: The Graphical Method** – Introduction, Important definitions, Graphical solution methods of LP problem. **Linear Programming: The Simplex Method** – Introduction, Standard form of an LP problem, Simplex algorithm (Maximization & Minimization Case), Types of linear programming solutions.

**Transportation Problem** – Introduction, Mathematical model of transportation problem, Methods of finding initial solution. **Assignment Problem** – Introduction, Mathematical

model of statement assignment problem, Solution methods of assignment problem (Hungarian Method).

#### **UNIT - IV**

**Decision Theory and Decision Trees** – Introduction, Steps of decision making process, Types of decision making environments, Decision making under uncertainty, Decision making under risk, Decision trees analysis, Decision making with utilities. **Theory of Games** - Introduction, Two Person zero sum games, Pure strategies (Minimax and minimum principles): games with saddle point, Mixed strategies: game without saddle point, The rules of dominance, Solution methods for games without saddle point. **Project management: PERT and CPM** – Introduction, Basic difference between PERT and CPM, Phases of project management, PERT/CPM network components and precedence relationships, Critical path analysis, Project scheduling with uncertain activity times, Project time-cost trade-off, Updating of the project progress. **Replacement and Maintenance Models** – Introduction, Types of failure, Replacement of items whose efficiency deteriorates with time, Replacement of items that fail completely, Other replacement problems.

#### **Text Book:**

1. E. Narayanan Nadar, Statistics, PHI.
2. J. K. Sharma, Operation Research – Theory & applications, Macmillan.

#### **Reference Books:**

1. P. N. Arora, S. Arora, Statistics, S. Chand.
2. Richard A. Johnson & Gouri K. Bhattacharyya, Statistics – Principles and Methods, Wiley.
3. S. C. Gupta, V. K. Kapoor, Fundamentals of Mathematical Statistics, S. Chad & Sons.
4. Ken Black, Applied Business Statistics, Wiley.
5. Ravindran, Phillips & Solberg, Operation Research – Principles & Practice, Wiley.
6. R. Panneerselvam, Operations Research, PHI.
7. Prem Kumar Gupta, D. S. Hira, Operations Research, S. Chand.

### **Paper - IV: E-Commerce & Web Designing (2T4)**

#### **UNIT - I**

**Introduction-** Electronic Commerce And Physical Commerce, The DIGITAL Phenomenon, Looking At E-Commerce From Different Perspectives, Different Types Of E-Commerce, Some E-Commerce Scenarios, Changes Brought By E-Commerce, Advantages Of E-Commerce, Myths About E-Commerce Development And Implementation, System Model And Road Map Of This Book. **Internet And World Wide Web-** An Overview Of The Internet, Brief History Of The Web, Web System Architecture, Uniform Resource Locator, Overview Of The Hypertext Transfer Protocol, Hypertext Transfer Protocol (HTTP), Generation Of Dynamic Web Pages, Cookies, HTTP/1.1, Example. **Client Side Programming-** Important Factors In Client-Side Or Web Programming, Web Page Design And Production, Overview Of HTML, Basic Structure Of An HTML Document, Basic Text Formatting, Links, Images, ImageMap, Tables, Frames, Form, Cascading Style Sheets, Javascript.



## UNIT - II

**Server-Side Programming I: Servlet Fundamentals-** Revisiting The Tree-Tier Model, Common Gateways Interface (CGI), Active Server Page (ASP), Overview Of Java Servlet, Java Servlet Architecture, Overview Of Servlet API, Building The Virtual Bookstore- Step By Step, Your First Servlet- Welcome To VBS, Compilation And Execution Of Servlets, An Interactive Servlet Program Example: Topics Of Interest, Topics Of Interest: Cookie Approach.

**Server-Side Programming II: Database Connectivity-** Introduction, Relational Database Systems, JDBC Perspectives, A JDBC Program Example: Simple Servlet Book Query, An Advance Book Query: Servletbookquerymulti, Advanced JDBC Servlet: VBS Advance Book Search Engine. **Server-Side Programming III: Session Tracking-** Introduction, Traditional Session Tracking Techniques, The Servlet Session Tracking Techniques, The Servlet Session Tracking API, A Practical Case: VBS Shopping Cart.

**Basic Cryptography Enabling E-Commerce-** Security Concern, Security Requirements, Encryption, Two Basic Principles For Private Key Encryption, The Key Distribution Problem, Diffie-Hellman Key Exchange Protocol, Public Key Encryption, RSA Encryption Algorithm, Hybrid Encryption, Other Public Key Encryption Methods, Stream Cipher And Block Cipher, Message Digest, Message Authentication Code, Digital Signature, Digital Signature Standard, Authentication.

## UNIT - III

**Internet Security-** IPSec protocol, setting up associations, the authentication header (AH) service, the encapsulating security payload (ESP) service, preventing replay attack, application of IPSec: virtual private network, firewalls, different types of firewalls, example of firewall system, secure socket layer (SSL), putting everything together.

**Advanced techniques for e-commerce-** introduction to mobile agents, WAP: the enabling technology for mobile commerce, XML (eXtensible Markup Language), Data mining.

## UNIT - IV

**Internet Payment System-** Characteristics Of Payment System, 4C Payment Methods, SET Protocol For Credit Card Payment, E-Cash, E-Check, Micropayment System, Overview Of Smart Card, Overview Of Mondex, Putting It All Together For Payment In The VBS. **Consumer Oriented E-Commerce-** Introduction, Traditional Retailing And E-Retailing, Benefits Of E-Retailing, Key Success Factors, Models Of E-Retailing, Features Of Retailing, Developing A Consumer-Oriented E-Commerce System, The PASS Model.

**Business Oriented Commerce- Features** Of B2B E-Commerce, Business Model, Integration. **E-Services-** Categories Of E-Services, Web-Enabled Services, Matchmaking Services, Information-Selling On The Web, E-Entertainment, Auctions And Other Specialized Services, Traditional Versus Internet Advertising, Internet Advertising Techniques And Strategies, Business Models For Advertising And Their Revenue Streams, Pricing Models And Measurement Of The Effectiveness Of Advertisements, Web Publishing- Goals And Criteria, Web Site Development Methodologies, Logical Design Of The User Interface I- Abstract User Interface, Logical Design Of The User Interface II- Flow Of Interaction, Usability Testing And Quality Assurance, Web Presence And Visibility.

**Text Book:**

1. Henry Chan, Raymond Lee, Tharam Dillon, & Elizabeth Chang, E-Commerce – Fundamentals and Applications, Wiley.

**Reference Books:**

1. Eric van der Vlist, Danny Ayers, Erik Bruchez, Joe Fawcett, Alessandro Vernet, Professional Web 2.0 Programming, Wiley.
2. Michael P. Papazoglou, Pieter M.A. Ribbers, e-Business, Wiley.
3. Brian P. Hogan, HTML5 and CSS3, Shroff Publishers.
4. Sandeep panda, AngularJS – Novice to Ninja, Shroff Publishers.

**Practical List of E-Commerce & Web Designing**

1. Write a program in HTML to illustrate the use of Formatting tags => BOLD, ITALIC, UNDERLINE, SUPERScript, SUBScript, AND STRIKETHROUGH.
2. Write a paragraph centrally aligned and change the color of text to BLUE and Background to YELLOW. The size of the font should be 6.
3. Write a program in HTML to illustrate the below given formats.
  - a) The page should contain a paragraph which is centrally aligned.
  - b) FIRST line of the paragraph should be BOLD and ITALIC.
  - c) STRIKEOUT the Second Line.
  - d) Underline and change the color to RED, of the third line.
  - e) Change the font size of the fourth Line to 5.
  - f) Change the color of the text to GREEN.
  - g) Two horizontal lines below the paragraph.
4. Write a program in HTML to link two files.
  - a) The name of the first file is LINK1.HTML and that of second file is LINK2.HTML.
  - b) LINK2.HTML should contain a Back link also.
5. Write a program in HTML to Design a Table containing 5 columns and 4 rows. The name of the columns should be ENO, NAME, DESIGNATION, SALARY and CITY.
6. Write a program in HTML to design a Table containing 5 columns and 4 rows. The name of the columns should be ENO, NAME, DESIGNATION, SALARY and CITY. The table should also contain the below given specifications.
  - a) Table should contain BORDER.
  - b) Background color of the Table should be GREEN.
  - c) Color of the Text should be BLUE.
  - d) Text should be centrally aligned in the cell.
7. Write a program in HTML to Design a Table containing 5 columns and 4 rows. The name of the columns should be ENO, NAME, DESIGNATION, SALARY and CITY. Illustrate the usage of cell padding and cell spacing. Also align the Table to the CENTRE of the page.

8. Write a program in HTML to illustrate the usage of ROWSPAN in the below given format.

|        |               |
|--------|---------------|
| CITY   | TOWN          |
| NAGPUR | SHANKAR NAGAR |
|        | DHARAMPETH    |
|        | RAMDASPETH    |
| BOMBAY | DADAR         |
|        | V.T.          |
|        | THANE         |

9. Write a program in HTML to illustrate the usage of COLUMN SPAN (COLSPAN) in the below given format.

| NAME    | LIVING CITY | COMPANY CITY |
|---------|-------------|--------------|
| SUJEET  | CHHINDWARA  |              |
| TAPAN   | NAGPUR      | BOMBAY       |
| RAM     | BOMBAY      |              |
| MOHAN   | BANGALORE   |              |
| KRISHNA | PUNE        |              |
| MANGESH | BOMBAY      | NAGPUR       |
| AVINASH | DELHI       |              |

10. Write a program in HTML to divide the screen horizontally into two sections.
11. Write a program in HTML to divide the screen vertically into two sections.
12. Write a program in HTML to divide the Screen into 4 sections.
13. Write a program in HTML to demonstrate the usage of Marquee text with the below given Specifications.  
 Marquee text is INTERNATIONAL COLLEGE.  
 Color of text is BLUE.  
 Background color is YELLOW.  
 Size of Text is 7.  
 Direction is LEFT to RIGHT.
14. Write a program in HTML to demonstrate the use of the Marquee Text with the below given Specifications.
- Marquee Text is INTERNATIONAL COLLEGE.
  - Text color is BLUE.
  - Repeat the Marquee Text five Times.
  - Make use of SCROLLAMOUNT.
  - Make use of SCROLLDELAY.
15. Write a program in HTML to demonstrate the usage of Image file with the below
- given specification.
  - Background color of page is GREEN.
  - The size of Image is 400 x 400 pixels.
  - The Image should contain a border.
  - Alternate text is "IMAGE NOT FOUND".
  - Image should appear on the centre of the page.
16. Write a program in HTML to Demonstrate the usage of Image file with the below given specifications.
- Background color is RED.
  - The size of Image is 300 x 300 pixels.
  - The image should contain a BORDER.

- d) Alternate Text is "IMAGE is NOT FOUND".
  - e) Vertical space should be 100 pixels.
  - f) Horizontal space should be 350 pixels.
17. Write a program in Java Script which should prompt the user to enter the result of Question-"What is the result of 10+10?". The user will be given a chance to answer the question. If the answer is correct then the program should raise a message-"Congratulations". If the answer is wrong then the program should again ask the same question. If the answer is correct then the message should be –"Cleared in the second round" else another message should be generated specifying –" Sorry, try next time" and the program should exit. Note – Make use of If. Else.
  18. Write a program in Java Script which should prompt the user to enter the result of question –" What is the Result of 10 +10?. At the most the user will get 5 chances to answer the question. If the user gives the correct answer during the attempts then the program should exit the loop by raising a message-"Congratulations ". Otherwise, whenever the answer is wrong the program should alert the user that the answer is wrong. Even during the 5<sup>th</sup> attempt, if the answer is wrong then it should raise another alert message also specifying- "Sorry- Try Next Time". (Use Loop, Prompt and Alert).
  19. Write a program in Java Script which prompt the user to enter the Result of Question- " What is the Result of 10+10?.  
The program should repeat the question in two cases-
    - a. If the user is wrong.
    - b. And he wants to continue.
 The program should exit the loop in two cases-
    - b) If the answer is correct.
    - c) If the answer is wrong but the user doesn't want to continue.
    - d) (Use odd Looping, Prompt, Alert and Confirm Dialog Boxes).
  20. Write a program in Java Script which raises a Message:"  
"Welcome To Our Website" as soon as the Site is loaded. It should also display a message: -"Thank You " when the user switch over from the page.
  21. Write a program in Java Script to check the username. If the user name is correct, the program should give an alert message:- "Welcome" along with user name else the program should alert the user specifying that the user name is wrong. Use DOM and onchange event.
  22. Write a suitable program in Java Script which displays a message depending on the radio button being clicked using DOM and onclick event.
  23. Write a program in Java Script to count the number of elements in a forms elements array. Check the number of elements returned against the number of form elements described between < Form> and </Form> tag in HTML page that is running in the browser. Recognize that number of elements in the array match the number of elements described between <FORM> and </FORM> tag in HTML page exactly.
  24. Write a program in Java Script to check whether the form is filled or not. If one of the elements is not filled then display an alert message to fill the particular element using DOM and BUTTON.
  25. Write a program in Java Script to check whether the form is completely filled or not. If one of the elements is not filled then display an alert message to fill the particular element using DOM and onsubmit event.